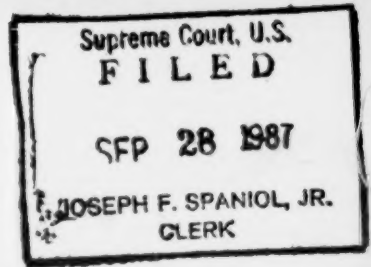


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No. _____

IN THE
SUPREME COURT OF THE UNITED STATES

October Term, 1987

UMC ELECTRONICS COMPANY,

Petitioner,

v.

UNITED STATES OF AMERICA,

Respondent.

**PETITION FOR A WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF
APPEALS FOR THE FEDERAL CIRCUIT**

BERNARD G. SEGAL*
JAMES A. DROBILE
CARL A. SOLANO
Schnader, Harrison,
Segal & Lewis
Suite 3600, 1600 Market Street
Philadelphia, Pennsylvania 19103
(215) 751-2222
Attorneys for Petitioner.

**Counsel of Record*

2291



QUESTION PRESENTED

Can an "invention" be "on sale" within the meaning of Section 102(b) of the Patent Act of 1952 when the invention has not yet been completed (reduced to practice), so that failure to apply for a patent within one year of such sale activity will render a patent on the completed invention invalid?

PARTIES TO THE PROCEEDING

Petitioner UMC Electronics Company has no parent companies, subsidiaries other than wholly owned subsidiaries, or affiliates. Respondent United States of America is the only other party to this proceeding.

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**PETITION FOR A WRIT OF CERTIORARI
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Petitioner, UMC Electronics Company, respectfully prays that a writ of certiorari be issued to review the judgment of the United States Court of Appeals for the Federal Circuit entered in this case on April 15, 1987. That judgment involves an important question of patent law that was decided by the court below in a way that conflicts with the intent of Congress, long-standing precedents in the federal courts, and statements in decisions by this Court. By replacing a clear rule with an undefined standard, the decision has brought unnecessary uncertainty and confusion to this area of the law.

OPINIONS BELOW

The opinion of the court of appeals (A1-A41) is reported at 816 F.2d 647, 2 U.S.P.Q. 2d 1465 (Fed. Cir. 1987). The opinion of the United States Claims Court (A42-A82) is reported at 8 Cl. Ct. 604, 228 U.S.P.Q. 396 (1985).

STATEMENT OF JURISDICTION

The judgment of the court of appeals was entered on April 15, 1987. A84. A timely petition for rehearing was denied on June 29, 1987 (A85) and a suggestion for rehearing in banc was denied on July 14, 1987 (A86). This Court has jurisdiction to review the judgment of the court of appeals under 28 U.S.C. § 1254(1).

STATUTORY PROVISION INVOLVED

This case involves the construction of Section 102(b) of the Patent Act of 1952, as amended, 35 U.S.C. § 102(b), which provides:

A person shall be entitled to a patent unless —

....

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for a patent in the United States.

The full text of Section 102 is set forth at A94-95.

STATEMENT OF THE CASE

UMC is the owner of United States Patent No. 3,643,513 for a device that senses and records the acceleration load levels of a predetermined magnitude that aircraft undergo during inflight maneuvers. In 1980, UMC brought this action in the United States Claims Court alleging that it is entitled to compensation because the United States, without license of UMC, is using a device manufactured by a UMC competitor that infringes UMC's patent. Jurisdiction was based on 28 U.S.C. § 1498(a).

Among the defenses asserted by the United States was that UMC's patent is invalid under Section 102(b) of the Patent Act because, according to the Government, UMC had offered the invention for sale to the United States Navy more than one year before August 1, 1968, the date when UMC filed its patent application. The basis for this contention was that on July 27, 1967, UMC had responded to a request by the Navy for proposals to deliver acceleration measuring devices by offering to supply its contemplated invention, even though only part of the invention had been constructed and no complete prototype that physically embodied the entire device was yet in existence. Because no completed device had yet been made, the invention had not been "reduced to practice" — that is, made into a completed and operable invention — at the time UMC made its response to the Navy. A4-5, A8-9.

The Claims Court rejected the United States' contention. It held that, because no complete physical embodiment of the invention existed at the time UMC made its offer to the Navy, there had been no offer to sell the invention within the meaning of the Patent Act and

UMC's patent was not invalid under Section 102(b). A63-68.¹ The court also held, however, that, while UMC's patent was valid, the device of UMC's competitor that was being used by the United States did not infringe the patent. A70-79. Accordingly, the court entered judgment for the United States. A83.

UMC appealed to the Court of Appeals for the Federal Circuit from the holding of noninfringement. The United States filed a cross-appeal on the question of validity of the UMC patent. On April 15, 1987, the court, in an opinion by the Honorable Helen W. Nies, affirmed the judgment of the Claims Court, but on grounds different from those set forth in the Claims Court's decision. The court held UMC's patent invalid under Section 102(b). Accordingly, it did not reach the question of infringement. A1-22.

The court did not address any of the arguments for reversal made by the parties. Instead, *sua sponte*, it engaged in a novel review of the legal requirements necessary for application of Section 102(b) of the Patent Act. The court observed that because no physical embodiment of UMC's device existed at the time of the offer to the Navy, no reduction of the invention to practice had been accomplished by that date. A8-9. The

1. The Claims Court treated the need for a complete physical embodiment of the invention as a requirement that was separate and independent from the need for reduction to practice. While it held that the absence of a complete physical embodiment precluded application of the bar to a valid patent in Section 102(b), it also stated that the separate reduction to practice requirement had been met because an important part of UMC's device had been built and tested before the offer to the Navy was made. A65. As the court of appeals held, that latter analysis was wrong, since an invention is not reduced to practice until all of it has been built in an operable form. A8-9; see *Correge v. Murphy*, 705 F.2d 1326, 1329 (Fed. Cir. 1983).

court acknowledged that the parties, as well as the Claims Court, had considered reduction to practice (or, in the Government's view, substantial reduction to practice) a prerequisite to sale of an invention under Section 102(b). Nevertheless, the court stated that the controlling question was whether reduction to practice is indeed required, and it held that "reduction to practice is not always a requirement of the on-sale bar." A9. The court held that statements to the contrary in earlier decisions by the court and by its predecessor courts, the Court of Customs and Patent Appeals and the Court of Claims, were dicta that could be disregarded without in banc consideration. A10-15. Declining to formulate a definite rule to replace the reduction to practice requirement, the court said that it would decide the question by reviewing the totality of the circumstances. On the basis of such a review, the court concluded that UMC's discussions with the Navy about its incomplete invention one year and five days before UMC applied for its patent rendered the patent invalid under Section 102(b). A19-22.

Judge Edward S. Smith dissented. He pointed out that reduction to practice is a congressionally mandated requirement for the application of Section 102(b) that is needed to supply a clear date for determining when the one-year period in that section begins to run. A27-30. He charged that the panel majority had acted contrary to binding precedent when it discarded this requirement and that the majority had failed to follow ordinary judicial process because only the court sitting in banc could depart from binding precedent. A23-26, A33-38.

UMC filed a timely petition for rehearing that was denied by the panel over Judge Smith's dissent. A85. In the petition, UMC also requested rehearing by the court in banc. That request was denied two weeks later, with Judges Smith and Newman dissenting. A86.

REASONS FOR GRANTING THE WRIT

The Decision Below Conflicts with the Intent of Congress in Enacting Section 102(b) of the Patent Act and Undermines the Policy of Certainty That Is Embodied in the Statute Because the Decision Permits the Time Within Which a Patent Application Must Be Filed To Begin Running Before an Invention Is Completed

Over the past two centuries, Congress and this Court have developed a rule of patent law, now embodied in Section 102(b), that an offer to sell an invention more than one year before applying for a patent would make the invention unpatentable. A key to this rule has been that the one-year period begins to run only after the invention has been completed, or, in patent law terminology, "reduced to practice." In this case, the court below has departed from this rule and from the sound policy that underlies it. Because the court below is the only United States Court of Appeals with jurisdiction over patent matters, its departure from policy and precedent can be corrected only by this Court. Review by this Court is necessary to restore the rule that this Court and Congress have formulated so carefully.

"Reduction to practice" is a well-known term of art in patent law. It means that the inventor has reduced his abstract idea to a complete and fully operable device or process. See *Bogoslowsky v. Huse*, 142 F.2d 75, 76-77 (C.C.P.A. 1944). Only then has a new invention been made. As this Court observed in *Clark Thread Co v. Willimantic Linen Co.*, 140 U.S. 481, 489 (1891), "It is evident that the invention was not completed until the construction of the machine. A conception of the mind is not an invention until represented in some physical form." Thus, "In the eyes of the law, the invention is not completed until it has been reduced to practice." *Bogoslowsky, supra*, at 77. "Without an actual reduction to

practice there is no invention in existence." *Peeler v. Miller*, 535 F.2d 647, 651 (C.C.P.A. 1976).

Applying this doctrine, courts — until this case — have used reduction to practice as the benchmark for determining whether an "invention" was "on sale," so that the one-year period in Section 102(b) for filing a patent application will have begun to run, and inventors and patent counsel throughout the nation consistently have relied on that clearly defined benchmark in determining when their patent applications must be filed. Indeed, one court said that this rule should be known instinctively by all inventors, for the need for a reduction to practice before an "invention" could be on sale "is rooted in scientific reality and simple common sense." *Digital Equipment Corp. v. Diamond*, 653 F.2d 701, 718 n.21 (1st Cir. 1981).

For the first time in any appellate court, the decision below abandoned reduction to practice as a controlling benchmark in measuring the one-year period provided for in Section 102(b). In doing so, the court discarded long-standing federal precedent and contravened the clear intent of Congress in enacting the statute. As Judge Smith's dissent predicts, the result of the decision will be confusion and uncertainty in the United States' technological community. Thus, at a time when American industry and technology are facing increasing threats from foreign competitors, the decision is not merely a judicial error, but is a blow to national economic well-being. Review by this Court therefore is essential.

- A. The legislative history of Section 102(b), and the decisions interpreting the section, make clear that the time period in the statute should not begin to run before an invention is completed.

What is now Section 102(b) can be traced to British statutes and decisions in the late eighteenth century that held that an inventor could not obtain a patent if he had abandoned his invention to the public through sales or other public uses before applying for a patent. In one of this Court's first patent decisions, *Pennock v. Dialogue*, 27 U.S. (2 Pet.) 1 (1829), the Court followed the British precedents in holding that sales of a device before filing a patent application made the device unpatentable. Quoting Lord Chief Justice Gibbs in *Wood v. Zimmer*, 1 Holt 58, 60 (C.P. 1815), this Court said, "to entitle a man to a patent, the invention must be new to the world; the public sale of that which is afterwards made the subject of a patent, though sold by the inventor only, makes the patent void." 27 U.S. (2 Pet.) at 20. However, this Court then added its own clarification: "By 'invention,' the learned judge undoubtedly meant, as the context abundantly shows, not the abstract discovery, but the thing invented; not the new secret principle, but the manufacture resulting from it." *Id.* This construction of the word "invention" for purposes of determining whether sales activity barred patentability has been followed throughout the subsequent history of the Patent Acts.

In 1836, Congress declared specifically that no patent would issue for an invention that is "on sale" at the time the patent application is filed. Act of July 4, 1836, ch. 357, § 6, 5 Stat. 117, 119. At the same time, Congress recognized that inventors need time to try out their inventions and to perfect them. See S. Rep. No. 338, 24th Cong., 1st Sess. 6 (1836). Therefore, in 1839, Congress added a two-year grace period within which to

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apply for a patent after sales activity regarding the invention takes place. Act of March 3, 1839, ch. 88, § 7, 5 Stat. 353, 354. In considering that provision, this Court explained, "The evident purpose of the section was to fix a period of limitation which should be certain, and require only a calculation of time Its object was to require the inventor to see to it that he filed his application within two years from the completion of his invention, so as to cut off all questions of the defeat of his patent by a use or sale of it by others more than two years prior to his application" *Andrews v. Hovey*, 123 U.S. 267, 274 (1887). See also *Kendall v. Winsor*, 62 U.S. (21 How.) 322, 328-29 (1859). Consistently, the Court held that a public use or sale for experimental purposes "and in order to bring the invention to perfection" does not start the running of the two-year period. *Elizabeth v. Pavement Co.*, 97 U.S. 126, 134 (1878). Cf. *Hall v. Macneale*, 107 U.S. 90, 97 (1883).

In 1939, while shortening the grace period from two years to one, Congress endorsed this construction: "The law thus permits an inventor, *after his invention is fully completed*, to make the invention known to the public for a period of 2 years before filing his application for patent." S. Rep. No. 876, 76th Cong., 1st Sess. 1 (1939) (emphasis added); H.R. Rep. No. 961, 76th Cong., 1st Sess. 1 (1939) (emphasis added). Section 102(b) of the 1952 Patent Act is merely a recodification of the statute as it existed after the change to one year in 1939. See S. Rep. No. 1979, 82d Cong., 2d Sess. 5, 17, (1952), reprinted in 1952 U.S. Code Cong. & Admin. News 2394, 2399, 2410.

The decision below failed to consider this history and, as a result, departed completely from it. In doing so, the court also discarded the long line of federal decisions requiring completion of an invention by reduction to practice before sales activity would start the running of

the grace period in the statute. This Court's early decisions such as *Andrews v. Hovey*, *supra*, and *Elizabeth v. Pavement Co.*, *supra*, implied such a rule. In his dissent below, Judge Smith cited eleven decisions by the Federal Circuit and its predecessor courts that determined reduction to practice to be an essential prerequisite for sales activity to have an effect under Section 102(b). A33-38. In addition, before establishment of the Federal Circuit, every United States Court of Appeals to consider the question had held that reduction to practice was required. See *Digital Equipment Corp. v. Diamond*, 653 F.2d 701, 718 (1st Cir. 1981); *Timely Products Corp. v. Arron*, 523 F.2d 288, 302 (2d Cir. 1975); *DeLong Corp. v. Raymond International, Inc.*, 622 F.2d 1135, 1143-45 (3d Cir. 1980); *In re Yarn Processing Patent Validity Litigation*, 498 F.2d 271 (5th Cir.), *cert. denied*, 419 U.S. 1057 (1974); *Stewart-Warner Corp. v. City of Pontiac*, 717 F.2d 269, 273-74 (6th Cir. 1983); *CTS Corp. v. Piher International Corp.*, 527 F.2d 95, 103 (7th Cir. 1975), *cert. denied*, 424 U.S. 978 (1976); *Austin v. Marco Dental Products, Inc.*, 560 F.2d 966, 970 (9th Cir. 1977), *cert. denied*, 435 U.S. 918 (1978); *Dataq, Inc. v. Tokheim Corp.*, 736 F.2d 601, 605 (10th Cir. 1984).

How well established the reduction to practice rule was before the Federal Circuit's decision in this case, and how great a change that decision makes in existing law, is illustrated by an opinion issued by the Federal Circuit just a few weeks before its decision in the present case. In *State Industries, Inc. v. Mor-Flo Industries, Inc.*, No. 86-1452 (Mar. 3, 1987) (reproduced at A87-93), *pet. for cert. filed*, 56 U.S.L.W. 3010 (June 30, 1987) (No. 87-11), the court, in a unanimous decision by Judge Smith, joined by Chief Judge Markey and Judge Davis, held (as an alternative basis for its decision) that the bar of Section 102(b) was not applicable because the invention was not reduced to practice at the

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time the sales activities at issue took place. A92-93. The court considered this holding so unremarkable at the time that it did not even publish the opinion. It issued the decision with a notice that, "This opinion will not be published in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest." A87. One month later, the court, in the present case, abandoned the body of law to which its unpublished opinion in *State Industries* had adhered.

- B. By holding that the time period in Section 102(b) may begin to run at some indefinite date before completion of the invention, the decision below has added uncertainty and confusion to patent law, an effect that is harmful to the public interest and not justified by any countervailing policy under the statute.**

The court of appeals did not formulate any new rule to replace the one that it discarded. Instead, it stated (A 19, A22):

We simply say here that the on-sale bar does not necessarily turn on whether there was or was not a reduction to practice of the claimed invention. All of the circumstances surrounding the sale or offer to sell, including the stage of development of the invention and the nature of the invention, must be considered and weighed against the policies underlying section 102(b). . . .

. . . .

We do not attempt here to formulate a standard for determining when something less than a complete embodiment of the invention will suffice under the on-sale bar.

The court's "totality of the circumstances" and "weighing of policies" approach necessarily will increase the uncertainty and confusion in the law under Section 102(b). Inventors will be unsure when the time within which they must apply to patent their invention will run. Infringers will be encouraged to take advantage of the uncertainty by challenging the validity of any patent for which the inventor tested the marketplace before filing a patent application. As Judge Smith pointed out in his dissent, "In more and more cases [validity will] only be answered with finality by a judicial determination in which there is no further appeal." A 39.

Such uncertainty completely undermines the way in which a time period like that in Section 102(b) is supposed to operate. Congress intended to "fix a period of limitation which should be certain, and require only a calculation of time." *Andrews v. Hovey*, *supra*, 123 U.S. at 274. Such a plan requires that the date when the time period begins running be clearly fixed. The decision below replaces what has been a readily ascertainable date with a nebulous standard that, at best, will be extremely difficult to apply.

The practical consequences of the court's decision are outlined in Judge Smith's dissent. A38-40. Inventors, who need to perform market research to determine the potential success and utility of their uncompleted inventions, will be left in a quandary. They can defer filing a patent application until they are satisfied that the device is both marketable and complete, running a risk that early market research activities will render the patent invalid or at least will cause it to become subject to extensive and expensive litigation to determine its validity. Or, more likely, they will file premature patent

applications for "half baked" inventions out of an abundance of caution. Such applications will place an increased burden on the patent system and the technological community. And, as Judge Smith notes (A40), applications for such incomplete inventions might not even give the cautious patent applicant the full protection that he expects.

The majority opinion identified no policy considerations that outweigh the policy of certainty embodied in Section 102(b) and thereby would justify abandonment of the reduction to practice benchmark. None of the policies listed at the beginning of the court's opinion (A10-11) compels such a result. The policy of "[giving] the inventor a reasonable amount of time following sales activity . . . to determine whether a patent is a worthwhile investment" (A11) points to a *contrary* result. And, since UMC's device was incomplete and not made public at the time of UMC's discussions with the Navy, there could have been no justifiable reliance by anyone that the invention already was in the public domain.

There was no showing by the court of how the reduction to practice rule could interfere in any meaningful way with the remaining policies of "favoring prompt and widespread disclosure of new inventions" or of "[preventing] the inventor from commercially exploiting the exclusivity of his invention substantially beyond the statutorily authorized 17-year period" (A10). The rule has worked in harmony with those policies for a great many years. For an inventor to profit commercially from his invention, he would have to complete the invention and deliver it to its purchaser without delay. There is no practical danger that permitting early commercial discussions would allow an inventor to postpone completion of his invention and thereby defer making it available to the public or prolong his exclusive commercial rights. Indeed, the normal effect of commercial

discussions would be to speed up completion and delivery of the invention so that a sale could be completed. Thus, none of the policies that underlie Section 102(b) would be fostered by abandonment of the reduction to practice rule.²

- C. Because the court below has exclusive jurisdiction over patent matters, review by this Court is essential to restore Section 102(b) to its correct meaning.**

The Court of Appeals for the Federal Circuit was created to help ease this Court's burden by bringing uniformity to patent law, thereby reducing the need for consideration of patent issues by this Court. However, the Federal Circuit's special jurisdiction does not immunize it from Supreme Court review. Where, as here, that court has departed from the intent of Congress on a significant question of federal law, review of its decision is at least as appropriate as would be review of any similar decision by one of the regional courts of appeals.

2. The closest that the court of appeals came to explaining why it rejected the rule was its statement that the rule somehow is "inherently inconsistent" with the principle that a patent is invalid if the patent application was filed more than one year after the invention was rendered obvious by information available to the public. See A17-18. But there is no inconsistency. Obviousness is determined only by reference to the "prior art" that bears on the new invention. *Graham v. John Deere Co.*, 383 U.S. 1 (1966). Private negotiations with the Navy regarding supply of an uncompleted invention have not been considered prior art — or, at least, were not so considered before the decision below. They therefore could not be information available to the public from which an obviousness determination could be made. A thing offered for sale becomes prior art only if reduced to practice, a result fully consistent with the reduction to practice rule abandoned by the court below. See *In re Corcoran*, 640 F.2d 1331 (C.C.P.A. 1981). See generally A30-33 (dissenting opinion).

Because of the Federal Circuit's exclusive jurisdiction over patent matters, a future split in the circuits on this issue cannot occur. It nevertheless should be noted that the decision below conflicts with decisions by every United States Court of Appeals that considered this issue before the Federal Circuit was created. And to the extent that conflicting decisions are a guide to a need for this Court's review, the internal division within the Federal Circuit itself between the decision below and its decision just one month earlier in *State Industries v. Mor-Flo Industries*, *supra*, demonstrates that the uniformity that Congress sought when creating the Federal Circuit still is lacking. Unless this Court grants review to resolve this internal conflict, the uniformity that Congress envisioned will not be attained.

Because of the way that the court below changed existing law, review is particularly important. The court raised the question whether to jettison reduction to practice *sua sponte*, without any briefing or argument on the question. It disregarded a long line of its own precedents and those of its predecessor courts, all based on principles announced by this Court, to create new law on the issue, even though such action should have been precluded unless the court convened in banc. See *South Corp. v. United States*, 690 F.2d 1368 (Fed. Cir. 1982). The court declined to sit in banc to consider the issue. The result is that years of jurisprudence under Section 102(b) that had been understood and relied upon by inventors and their counsel have been wiped out by just two judges. And along with that jurisprudence went a congressionally intended construction of the Patent Act. Review by this Court is essential to restore clarity to this important area of patent law and to bring it back in line with this Court's teaching and that of Congress.

CONCLUSION

The Court of Appeals for the Federal Circuit has replaced a rule intended by Congress and supported by long-standing decisions of this Court and other federal courts with a standard that will be difficult to apply and will lead to confusion and uncertainty in the technological community. Its decision even is inconsistent with its own decision one month earlier in *State Industries v. Mor-Flo Industries*, *supra*, thereby eliminating the very uniformity in patent law that the Federal Circuit was created to assure. The court of appeals has identified no sound reason for its departure from precedent. Accordingly, this Court should grant certiorari to redress this situation by restoring certainty and uniformity and correcting the court of appeal's fundamental error on this critical question of patent law.

Respectfully submitted,

BERNARD G. SEGAL
JAMES A. DROBILE
CARL A. SOLANO
Schnader, Harrison, Segal &
Lewis
Suite 3600, 1600 Market Street
Philadelphia, Pennsylvania 19103
(215) 751-2222
Attorneys for Petitioner

Dated: September 28, 1987

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OPINION OF THE COURT OF APPEALS
(APRIL 15, 1987)

United States Court of Appeals for the Federal Circuit

UMC ELECTRONICS COMPANY,)	
)	
Appellant,)	
)	
v.	)	Appeal Nos. 86-522
	)	and 86-559
THE UNITED STATES,)	
)	
Cross-Appellant.)	

DECIDED: April 15, 1987

[As Corrected on April 16, May 15, and June 12, 1987]

Before SMITH, NIES, and ARCHER, *Circuit Judges*.

NIES, *Circuit Judge*.

UMC Electronics Company brought this action, pursuant to 28 U.S.C. §1498(a), to recover compensation for use of its patented invention by the United States. UMC is the owner of Patent No. 3,643,513, issued February 22, 1972, by assignment from the inventor Preston Weaver. The United States Claims Court, 8 Cl.Ct. 604, 228 USPQ 396 (1985), upheld the validity of all claims (1-4) but dismissed the complaint on the ground of no infringement or, more accurately, no use of the patented invention by the United States.

Both parties appeal. We reverse the Claims Court's holding that the patented invention was not on sale within the meaning of 35 U.S.C. § 102(b).¹ Accordingly, we affirm the judgment in favor of the government, but on different grounds.

I

Background

The claimed invention is an aviation counting accelerometer (ACA), a device for sensing and for recording the number of times an aircraft has been subjected to predetermined levels of acceleration.² The sensor com-

1. 35 U.S.C. § 102 provides in pertinent part:

§102. Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless

(b) the invention was . . . on sale in this country, more than one year prior to the date of the application for patent in the United States. . . .

2. The patent claims read as follows:

1. An accelerometer for counting the number of times each of a plurality of acceleration maneuvering loadings of predetermined magnitude of an aircraft occur, comprising means adapted to be mounted to an aircraft for sensing acceleration loading thereof, means providing a signal proportional to said accelerations, a plurality of sensing and storing means each responsive to an acceleration signal reaching a different predetermined value for sensing such signal and storing an indication of the value reached, a plurality of acceleration level recording means, timing means for timing a predetermined cycle and furnishing a signal indicative of the end of said timing cycle, means responsive to an acceleration signal reaching a reference level for causing said timing means to initiate a timing cycle, means responsive to said end of cycle signal arranged to pass a signal from each of said sensing and storing means to an associated one of said recording means.

2. The accelerometer of claim 1 further including means for filtering high-frequency components from the signal waveform.

ponent is mounted on the aircraft in a direction to measure acceleration loading and is connected electrically to the recorder component. Records produced by an ACA can indicate an aircraft's remaining useful life and show the need for structural inspection, overhaul, or rotation to less demanding service.

The patent application which became the patent in this suit ('513) was filed on August 1, 1968. Under 35 U.S.C. §102(b) the commercial exploitation and the state of development of the invention one year before the filing of the application for the subject invention are critical to resolution of the on-sale issue.

Prior to the late 1960's when UMC first entered this field, the U.S. Navy had procured ACA's from Maxson Electronics Company and from Giannini Controls Corporation. The Navy was dissatisfied with these ACA's because they sometimes recorded data that defied common sense, failed to count accelerations, or counted accelerations that never occurred. In 1966 the Navy contacted Preston Weaver, an employee of UMC, told him of the problems with existing ACA's and informed him of the Navy's interest in buying improved devices. Weaver designed an accelerometer, model UMC-A, and in late 1966, UMC was awarded a contract to supply the Navy with approximately 1600 units.

Footnote 2 (Continued)

3. The accelerometer of claim 1 wherein said means for recording comprises a plurality of counters, each counter arranged to be advanced by one of said sensing and storing means, said means for passing comprises a plurality of gates, each of said gates being arranged to apply an advance signal from one of said sensing and storing means to a respective one of said counters.

4. The accelerometer of claim 1 further including means for sensing when the signal exceeds said reference value, and disabling said sensing and storing means if the signal falls below said threshold value.

In early 1967, UMC concluded that its model UMC-A would not meet the Navy's performance specification required by its contract. Like the Maxson and Giannini ACA's, the UMC-A accelerometer utilized, as part of its sensor, an electromechanical transducer to mechanically generate signals that indicate levels of acceleration.³ Like the Maxson and Giannini devices, the UMC-A device sometimes counted and sometimes did not count the same acceleration load. The problem lay in the inherent frequency of the mass-spring system in the transducer. The devices could not distinguish between acceleration due to inflight maneuvers, which determines actual stress, and acceleration from other sources, e.g., windgusts or weapons release.

To prevent UMC from losing the ACA contract, Weaver began work to improve the sensor portion of an ACA and conceived his invention which uses an analog transducer in the sensor. An analog transducer electrically generates a varying signal (in contrast to the mechanically produced signal of prior devices) which can be filtered electronically to selectively remove the effects of superimposed vibrations. The Claims Court found that in April-May of 1967 Weaver built and tested an engineering prototype of his ACA containing a commercial analog transducer, a filter, a timing circuit and a voltage sensor that measured one load level. UMC sought to modify the existing contract for ACA's to substitute an analog transducer for the electromechanical transducer specified in the contract, but was unsuccessful in negotiating a modification.

3. The parties sometimes use the term "transducer" to identify the entire sensor portion of the ACA and at other times merely a component of that sensor portion. Weaver did not invent the analog transducer used in his sensor. He used the Kistler analog transducer which was both a commercial product and prior art. U.S. Patent No. 3,323,372, issued June 6, 1967, to Kistler.

In late May, 1967, the Navy issued new specifications and in July, 1967, requested proposals from contractors to deliver ACA's built to the new specification (Mil-A-22145B). Technically, the request for proposals called separately for a certain number of sensor components of an ACA system and a certain number of recorders, the two units being compatible in combination. UMC responded to the request on July 27, 1967, the final date for making a proposal, with an offer to supply \$1,668,743 worth of its improved ACA (hereinafter model UMC-B). UMC represented as part of its proposal that the sensor portion "has been constructed and tested in conjunction with voltage sensing and time controlled circuitry." In response to a Navy inquiry, on August 2, 1967, after the critical date, UMC submitted a technical proposal which described the model UMC-B in detail and included test results and schematic drawings. On August 9, 1967, UMC gave a demonstration of its device to the Navy at the UMC facility.

In early 1968 the Navy canceled the request to which the above submission of UMC was directed, and in July 1968, it issued another. The latter request eventually led to a contract with Systron-Donner Corporation, which company has been providing the Navy with ACA's utilizing analog transducers since 1970.

In June, 1980, UMC filed the instant action against the United States seeking compensation (after attempting for a number of years to obtain compensation directly from the Navy) by reason of the Navy's alleged use of its invention in the Systron-Donner ACA's. The Claims Court upheld the validity of the patent claims, which were challenged by the government on a number of grounds, but found that the Systron-Donner ACA's did not fall within the scope of the claims. Both parties appeal: UMC asking for reversal of the Claims Court's finding of no infringement; the government seeking to

have the claims in suit held invalid. Since we conclude that the Claims Court erred as a matter of law in holding that the claims of the '513 patent were not invalid under section 102(b), we need discuss only that issue in detail.

II

The Claims Court Decision

The Claims Court analyzed the on-sale bar under the following three-part test set out in *In re Corcoran*, 640 F.2d 1331, 1333-34, 208 USPQ 867, 870 (CCPA 1981), taken from *Timely Prods. Corp. v. Arron*, 523 F.2d 288, 302, 187 USPQ 257, 267-68 (2d Cir.1975):⁴

(1) The complete invention claimed must have been embodied in or obvious in view of the thing offered for sale. . . . Complete readability of the claim on the thing offered is not required because whatever is published (or on sale) more than one year prior to the filing of a patent application becomes part of the prior art over which the claim must be patentable. . . .

4. While in *Corcoran*, the Court of Customs and Patent Appeals stated that it agreed with the "principles" of *Timely Products*, only the first requirement of the *Timely Products* test was there in issue. *Barmag Barmer Maschinenfabrik AG v. Murata Mach., Ltd.*, 731 F.2d 831, 221 USPQ 561, 565 (Fed.Cir.1984). The patent owner had offered for sale a component of the claimed invention. The court held that the inventor had lost his right to a patent by reason of the one-year time bar of section 102(b) coupled with the non-obviousness provision of section 103 under the principles of law enunciated in *In re Foster*, 343 F.2d 980, 145 USPQ 166 (1965), *cert. denied*, 383 U.S. 966, 86 S.Ct. 1270, 16 L.Ed.2d 307, 149 USPQ 906 (1966). This type of loss of right, which we have termed a sections 102(b)/103 bar, will be discussed more fully *infra*.

(2) The invention must have been tested sufficiently to verify that it is operable and commercially marketable. This is simply another way of expressing the principle that an invention cannot be offered for sale until it is completed, which requires not merely its conception but its reduction to practice. . . .

(3) Finally, the sale must be primarily for profit rather than for experimental purposes. . . . [Citations omitted.]

Proceeding through the *Timely Products* requirements in reverse order, the Claims Court first noted that UMC had admitted that its offer to the Navy was for profit, not for experimentation. The court then found that the invention of the '513 patent had been reduced to practice before the critical date by Weaver's tests of the engineering prototype of the ACA in April-May, 1967, because Weaver admitted that as a result of those tests he was satisfied that his invention would serve its intended purpose. 8 Cl.Ct. at 620, 228 USPQ at 403-04. However, the court found the first requirement that the complete invention must be embodied in the thing offered for sale was not met because the engineering prototype did not include all elements of the claims. The court found that the evidence established that the inventor had not built a physical embodiment of the invention including all limitations of the claims before the critical date.

The court then construed the decision of this court in *Barmag Barmer Maschinenfabrik AG v. Murata Mach., Ltd.*, 731 F.2d 831, 221 USPQ 561 (Fed.Cir.1984). It interpreted *Barmag* as making an exception to the physical embodiment requirement where "commercial benefits outside the allowed time have been great." Because UMC "never produced its

ACA," the court found it "reaped no commercial benefits." Based on those findings, the court held that the invention of the '513 patent was not on sale within the meaning of section 102(b).

The court also held that the invention would not have been obvious from the prototype, which the court considered to be the thing offered for sale. 8 Cl.Ct. at 620, 228 USPQ at 404. This was error in the court's analysis, the *prototype* not being the thing offered for sale. The subject matter of the offer for sale is admittedly the claimed invention.

The government maintains that, properly interpreted, all three *Timely Products* requirements had been met, namely, (1) there was an offer to sell model UMC-B accelerometers which embodied the invention of the claims, (2) the invention had been reduced to practice, and (3) the offer to sell was for profit, not experimentation. Thus, per the government, the Claims Court erred as a matter of law in not holding the claims barred under section 102(b). UMC counters that because the inventor never built a physical embodiment containing all elements of the claims, the Claims Court erred in finding a reduction to practice of the invention, but that the court's error was cancelled out by its separate requirement for a physical embodiment.

III

As an initial matter, UMC is correct in pointing out the inconsistency between the Claims Court's conclusion that the claimed invention was "reduced to practice" before the critical date and its separate finding that no physical embodiment of the invention existed at that time. It is not sufficient for a reduction to practice that Weaver built and tested only a part of the later-claimed model UMC-B accelerometer. Under our precedent

there cannot be a reduction to practice of the invention here without a physical embodiment which includes all limitations of the claim. See *e.g.*, *Correge v. Murphy*, 705 F.2d 1326, 1329, 217 USPQ 753, 755 (Fed.Cir.1983); 1 C. Rivise & A. Caesar, *Interference Law and Practice* §137 (1940) and cases cited therein. Because the court found and the parties do not dispute that there was no physical embodiment containing all limitations of the claimed invention before the critical date, we conclude that the Claims Court erred in holding that there had been a reduction to practice.

The clarification of that issue, however, does not resolve the precise dispute here. Per the government, UMC's substantial attempted commercial exploitation of the claimed invention contravenes the policies of the on-sale bar despite the absence of a complete embodiment and, thus, raises an on-sale bar under section 102(b). For this proposition the government relies on the decision of this court in *Barmag*. On the other hand, UMC maintains that, as a matter of law, there is no on-sale bar unless the claimed invention had been reduced to practice before the critical date, and urges that we here reject the contrary suggestion in *Barbag*. Thus, we address first the issue whether reduction to practice of the claimed invention before the critical date is required to invoke the on-sale bar, and conclude, for reasons that follow, that reduction to practice is not always a requirement of the on-sale bar.⁵ This leads to the issue whether there is an on-sale bar in this case. On the undisputed facts, we hold that the invention of the '513 patent was on sale within the meaning of section 102(b).

5. The public use bar of section 102(b) implicates different considerations and nothing said here should be construed to encompass that part of the statute.

IV

Whether a reduction to practice is a requirement of the on-sale bar of 35 U.S.C. § 102(b) requires a review of our precedent.⁶ However, the issue has been directly addressed by this court or its predecessors in only two cases, *Barmag* and *General Electric Co. v. United States*, 654 F.2d 55, 60-61, 211 USPQ 867, 872-73 (Ct.Cl.1981) (en banc), although the issue has surfaced in others. In *General Electric Co. v. United States*, 654 F.2d at 61-64, 211 USPQ at 873-75, the Court of Claims, one of this court's predecessors, analyzed an on-sale bar issue by focusing on the policies underlying the bar to determine whether application of the bar would further those policies. Those policies were stated to be:

First, there is a policy against removing inventions from the public which the public has justifiably come to believe are freely available to all as a consequence of prolonged sales activity. Next, there is a policy favoring prompt and widespread disclosure of new inventions to the public. The inventor is forced to file promptly or risk possible forfeiture of his invention [patent] rights due to prior sales. A third policy is to prevent the inventor from commercially exploiting the exclusivity of his invention substantially beyond the statutorily authorized 17-year period. The on-sale bar forces the inventor to choose between seeking patent protection promptly

6. A panel of this court is bound by prior precedential decisions unless and until overturned *in banc*. *Kimberly Clark Corp. v. Fort Howard Paper Co.*, 772 F.2d 860, 863, 227 USPQ 36, 37 (Fed.Cir.1985); *Mother's Restaurant, Inc. v. Mama's Pizza, Inc.*, 723 F.2d 1566, 1573, 221 USPQ 394, 400 (Fed.Cir.1984). The decisions of the United States Court of Claims and the United States Court of Customs and Patent Appeals have been adopted as precedent. *South Corp. v. United States*, 690 F.2d 1368, 1371, 215 USPQ 657, 658 (Fed.Cir.1982).

following sales activity or taking his chances with his competitors without the benefit of patent protection. The fourth and final identifiable policy is to give the inventor a reasonable amount of time following sales activity (set by statute as 1 year) to determine whether a patent is a worthwhile investment. This benefits the public because it tends to minimize the filing of inventions [sic] of only marginal public interest.

654 F.2d at 61, 211 USPQ at 873 (citations omitted). On the facts of that case, the court held that the policies were violated and that there was a reduction to practice before the critical date. 654 F.2d at 62, 211 USPQ at 874. The latter holding obviated the need to agree or disagree with a detailed analysis of the trial judge, who had concluded that reduction to practice was not "indispensable in every case."⁷

7. Trial Judge Browne observed:

Reduction to practice is a term of art which arose out of the highly technical patent interference practice wherein the issue to be determined, as between contesting applicants, is which of the contestants was the first inventor, and thus is entitled to receive the patent on the invention. The term is found in §102(g) of the Patent Act. There, reduction to practice is to be taken into account in "determining priority of invention." Nevertheless, some courts have considered proof of reduction to practice to be relevant in determining whether certain sales activities constitute a bar to patent validity under §102(b). See, e.g., *Timely Products Corp. v. Arron*, supra. Even assuming the validity of such decisions, however, it does not necessarily follow that proof of reduction to practice is indispensable in every case involving an "on sale" bar. Availability of such proof may, of course, lighten the burden of the party asserting the bar.

General Electric Co. v. United States, 206 USPQ 260, 271 (Ct.Cl.Tr.Div.1979), *aff'd on other grounds*, 654 F.2d 55, 211 USPQ 867 (Ct.Cl.1981) (en banc).

In *Barmag*, the court went out of its way to reserve the question whether a physical embodiment should be a requirement of the on-sale bar in all cases. 731 F.2d at 836-37, 221 USPQ at 565. Without a physical embodiment, as stated above, there can be no reduction to practice.

Contrary to the Claims Court's interpretation, *Barmag* did not suggest that an embodiment might not be required only in instances where there had been actual sales of goods. An offer to sell a later-claimed invention may be sufficient to invoke the bar whether the offer is accepted or rejected. *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 860, 226 USPQ 402, 406 (Fed.Cir.1985), *cert. denied*, ___U.S. ___, 106 S.Ct. 1197, 89 L.Ed.2d 312 (1986); *In re Caveney*, 761 F.2d 671, 675, 226 USPQ 1, 3 (Fed.Cir.1985); *Barmag*, 731 F.2d at 836-37, 221 USPQ at 565; *D.L. Auld Co. v. Chroma Graphics Corp.*, 714 F.2d 1144, 1147, 219 USPQ 13, 18 (Fed.Cir.), *cert. denied*, ___U.S. ___, 106 S.Ct. 83, 88 L.Ed.2d 68 (1985); *General Electric*, 654 F.2d at 60, 211 USPQ at 872; *In re Theis*, 610 F.2d 786, 791, 204 USPQ 188, 192 (CCPA1979); *Gould, Inc. v. United States*, 579 F.2d 571, 583-84, 198 USPQ 156, 167 (Ct.Cl.1978).

In *Western Marine Elecs., Inc. v. Furuno Elec. Co.*, 764 F.2d 840, 844, 226 USPQ 334, 337 (Fed.Cir.1985), the argument was made that the patented invention, a gravity stabilized sonar device used on fishing boats, had not been reduced to practice and, thus, had not been on sale before the critical date. Because the device had not been mounted on a boat, it was argued, the device had not been sufficiently tested and, thus, had not been reduced to practice. In holding the invention to be on sale, the court did not directly answer that issue, stating that the "totality of the circumstances" determined whether the device was on sale. It reiterated:

Rigid standards are especially unsuited to the on sale provision where the policies underlying the bar, in effect, define it. See *TP Laboratories, Inc. v. Professional Positioners, Inc.*, 724 F.2d 965, 973, 220 USPQ 577, 583 (Fed.Cir.1984) [*cert. denied*, 469 U.S. 826, 105 S.Ct. 108, 83 L.Ed.2d 51 (1985)] (public use).

As a result, this court has been careful to avoid erecting rigid standards for section 102(b). . . . While approving of the *Timely Products* criticism of the "on hand" doctrine because the doctrine often produces results contrary to the basic policies underlying the on sale bar, this court [in *Barmag*] nevertheless declined to adopt the *Timely Products* test for all cases.

Accord, *J.A. LaPorte Inc. v. Norfolk Dredging Co.*, 787 F.2d 1577, 1580 n. 4, 229 USPQ 435, 437 n. 4 (Fed. Cir.), *cert. denied*, ___ U.S. ___, 107 S.Ct. 274, 93 L.Ed.2d 250 (1986); *King Instrument*, 767 F.2d 853, 226 USPQ 402; *In re Caveney*, 761 F.2d 671, 226 USPQ 1.

In a number of decisions the factual findings leading to the conclusion that there was no on-sale bar appear to be based on the assumption that reduction to practice is required, even though "reduction to practice" is not mentioned in the decision. In a footnote in *In re Dybel*, 524 F.2d 1393, 187 USPQ 593 (CCPA 1975), that court stated, "Moreover, 'the invention' was not in existence before it was actually installed on the Ford press since the claims required the press and electronic circuit as well as the transducer." 524 F.2d at 1401 n. 8, 187 USPQ at 598 n. (citation omitted).

In *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 622-23, 225 USPQ 634, 638-40

(Fed.Cir.), *cert. dismissed*, ___ U.S. ___, 106 S.Ct. 340, 88 L.Ed.2d 326 (1985), this court approved a jury instruction that "the section 102 bar applies to 'a completed invention that has been shown to be commercially useful for the purpose intended' " on the ground that "[t]he jury instruction focused attention on the factual question critical to this case, that is, whether the offers of sale involved 'functional machines and processes.' " This court concluded that the on-sale bar was not satisfied, because 'a reasonable jury could have found that the apparatus and method of the claims were not functional' by the critical date. *Id.* As in *Dybel*, the *Shatterproof Glass* court never specifically mentioned "reduction to practice."

In *Great Northern Corp. v. Davis Core & Pad Co.*, 782 F.2d 159, 164-65, 228 USPQ 356, 358 (Fed.Cir.1986), this court employed the following analysis:

The district court concluded, correctly we hold, that the invention was not reduced to practice until after February 28, 1977, and, therefore, the testing prior to that date did not constitute a §102(b) bar. The '732 support was not reduced to practice until it was sufficiently tested to demonstrate that it would work for its intended purpose, and that did not occur, in our view, until a location for the recesses, as defined in the claims, was determined that eliminated the cracking problem.

782 F.2d at 165, 228 USPQ at 358 (citations omitted).

A full reading of the *Dybel*, *Shatterproof Glass*, and *Great Northern* decisions makes it apparent that the parties did not raise and the court did not squarely address the issue of whether reduction to practice is an indispensable requirement of the on-sale bar. In *General Electric* and *Barmag*, consideration of the issue was

dicta, however well considered. In *Western Marine*, the court did not explicitly hold that there was or was not a reduction to practice of the claimed invention. It, therefore, cannot be said that this court has taken a definitive position either way on the issue we address here. Cf. *NLRB v. Boeing Co.*, 412 U.S. 67, 72, 93 S.Ct. 1952, 1955, 36 L.Ed.2d 752 (1973) (premise assumed in earlier cases is rejected when court was, at last, "squarely presented with the issue"); *Lear, Inc. v. Adkins*, 395 U.S. 653, 663, 89 S.Ct. 1902, 1907, 23 L.Ed.2d 610, 162 USPQ 1, 5 (1969) (Court receded from earlier endorsements of "licensee estoppel" as not "considered").

The case law of other courts regarding the on-sale bar is not uniform. Some courts have rejected any rigid rules for the operation of the statutory bar, focusing, as much of our precedent does, on the policies of the statute. Chief Judge Wright's comments in *Philco Corp. v. Admiral Corp.*, 199 F.Supp. 797, 815, 131 USPQ 413, 428-29 (D.Del.1961), are as apt today as when made in 1961:

The cases dealing with §102(b) of the Patent Act are in a state of confusion resulting in part from an attempt to establish hard and fast rules of law based upon overly refined legal distinctions. The area sought to be governed by these rules, however, encompasses an infinite variety of factual situations which, when viewed in terms of the policies underlying §102(b), present an infinite variety of legal problems wholly unsuited to mechanically-applied, technical rules.

The regional circuits that have considered the question have given lip service to a requirement of reduction to practice as part of the on-sale bar.⁸ However, when faced with a specific factual situation which appeared to fall within the intent of the statutory bar but did not technically satisfy the requirements for reduction to practice, these courts have stepped back from a rigid application of that requirement. In such cases, in an attempt to shoehorn the reduction to practice concept into the on-sale bar analysis, the courts looked to see whether the invention was "sufficiently" reduced to practice for purposes of the bar. See, e.g., *Dart Indus., Inc. v. E.I. DuPont DeNemours & Co.*, 489 F.2d 1359, 1365, 179 USPQ 392, 396 (7th Cir.1973). In this case, the government appears to urge such a position.

Adoption of a "sufficiently" reduced-to-practice requirement is in fact an abandonment of reduction to practice as that term is used in other contexts. This court observed in *Barmag*, 731 F.2d at 838 n. 6, 221 USPQ at 567 n. 6, that our case law does not support a variegated definition of reduction to practice. At this point, we point out that "reduction to practice" is a term of art which developed in connection with interference practice to determine priority of invention between rival claimants. See note 6, *supra*. In that context Judge Rich has said: "There are no degrees of reduction to practice; either one has or has not occurred." *Wolter v Belicka*,

8. E.g. *Dataq, Inc. v. Tokheim Corp.*, 736 F.2d 601, 605, 222 USPQ 677, 680 (10th Cir.1984); *Stewart-Warner Corp. v. City of Pontiac*, 717 F.2d 269, 273-74, 219 USPQ 1162, 1166 (6th Cir.1983); *Digital Equip. Corp. v. Diamond*, 653 F.2d 701, 718, 210 USPQ 521, 540 (1st Cir.1981); *Austin v. Marco Dental Prod., Inc.*, 560 F.2d 966, 970, 195 USPQ 529, 532 (9th Cir.), *cert denied*, 435 U.S. 918, 98 S.Ct. 1477, 55 L.Ed.2d 511, 197 USPQ 448 (1978); *CTS Corp. v. Piher Int'l Corp.*, 527 F.2d 95, 103, 188 USPQ 419, 425 (7th Cir.), *cert. denied*, 424 U.S. 978, 96 S.Ct. 1485, 47 L.Ed.2d 748, 189 USPQ 384 (1976).

409 F.2d 255, 262, 161 USPQ 335, 340 (CCPA 1969) (Rich, J., dissenting). It can only cause confusion in interference law, with its special technical considerations, and in operation of the on-sale bar, which is guided by entirely different policies, to adopt modifiers in connection with "reduction to practice," whatever the context.

Moreover, since reduction to practice is a term of art under this court's precedent, any specific ruling in one context on whether there is or is not a "reduction to practice" necessarily carries over into the other. For example, a holding here, like the trial court's, that there can be a reduction to practice without an embodiment containing all elements of the claim would have a major unintended impact on interference law. Conversely, by invoking reduction to practice as developed in interference law, an inventor might be able to escape the on-sale bar simply through deft claim draftsmanship.⁹

Finally, a major flaw in reduction to practice as a *per se* requirement of the on-sale bar in all cases is disclosed by a close analysis of *Timely Products*, the leading case which purports to adopt that requirement. A significant development with respect to the scope of section 102(b) occurred in a series of decisions beginning with those of another of our predecessors, the Court of Customs and Patent Appeals, when it recognized the operation of the bar in conjunction with the obviousness determination under section 103. In *In re Foster*, 343 F.2d at 988, 145 USPQ at 173, that court held:

9. Weaver could have claimed "an aircraft with an accelerometer . . ." instead of "an accelerometer. . . ." In that instance, the *claimed invention* would not have been reduced to practice even if Weaver had built and tested the entire ACA. *Correge v. Murphy*, 705 F.2d at 1329, 217 USPQ at 755 (aircraft vent system not reduced to practice because not tested in aircraft as claimed).

[S]ince the purpose of the statute has always been to require filing of the application within the prescribed period after the time the public came into possession of the invention, we cannot see that it makes any difference *how* it came into such possession, whether by a public use, a sale, a single patent or publication, or by combinations of one or more of the foregoing. In considering this principle, *we assume*, of course, that by these means *the invention has become obvious* to that segment of the "public" having ordinary skill in the art. Once this has happened, the purpose of the law is to give the inventor only a year within which to file and this would seem to be liberal treatment.

Accord Argus Chem. v. Fibre Glass-Evercoat, 759 F.2d 10, 14, 225 USPQ 1100, 1103 (Fed.Cir.1985); *In re Kaslow*, 707 F.2d 1366, 1374, 217 USPQ 1089, 1095 (Fed.Cir.1983); *In re Corcoran*, 640 F.2d at 133, 208 USPQ at 869.

Implicit in the operation of a sections 102(b)/103 bar is the *absence* of reduction to practice of the *claimed invention* as a requirement for the bar to operate. The invention, i.e., as claimed with all elements, is not the subject of the sale. If it were, section 103 would not be involved. With respect to non-claimed subject matter of the sale in a sections 102(b)/103 situation, it is meaningless to speak of "reduction to practice" of what was sold. "Reduction to practice" relates only to the precise invention expressed *in a claim*. Thus, the second requirement of *Timely Products*, reduction to practice of the *claimed invention*, is inherently inconsistent with the first requirement under which the bar is applicable if the claimed invention is merely "obvious in view of the thing offered for sale."

In view of all of the above considerations, we conclude that reduction to practice of the claimed invention has not been and should not be made an absolute requirement of the on-sale bar.

We hasten to add, however, that we do not intend to sanction attacks on patents on the ground that the inventor or another offered for sale, before the critical date, the mere concept of the invention. Nor should inventors be forced to rush into the Patent and Trademark Office prematurely. On the other hand, we reject UMC's position that as a matter of law no on-sale bar is possible unless the claimed invention has been reduced to practice in the interference sense.

We do not reject "reduction to practice" as an important analytical tool in an on-sale analysis. A holding that there has or has not been a reduction to practice of the claimed invention before the critical date may well determine whether the claimed invention was in fact the subject of the sale or offer to sell or whether a sale was primarily for an experimental purpose. A holding that there is a reduction to practice of the claimed invention "may, of course, lighten the burden of the party asserting the bar." *General Electric*, 206 USPQ at 271. Thus, we simply say here that the on-sale bar does not necessarily turn on whether there was or was not a reduction to practice of the claimed invention. All of the circumstances surrounding the sale or offer to sell, including the stage of development of the invention and the nature of the invention, must be considered and weighed against the policies underlying section 102(b). See *In re Brigance*, 792 F.2d 1103, 1107-08, 229 USPQ 988, 991 (Fed.Cir.1986); *Western Marine*, 764 F.2d at 845, 226 USPQ at 337.

The above conclusion does not lend itself to formulation into a set of precise requirements such as that

attempted by the *Timely Products* court. However, we point out certain critical considerations in the on-sale determination and the respective burdens of proof which have already been established in our precedent. Thus, without question, the challenger has the burden of proving that there was a definite sale or offer to sell more than one year before the application for the subject patent, and that the subject matter of the sale or offer to sell fully anticipated the claimed invention or would have rendered the claimed invention obvious by its addition to the prior art. Cf. *D.L. Auld*, 714 F.2d at 1150, 219 USPQ at 17 (102(b) only). If these facts are established, the patent owner is called upon to come forward with an explanation of the circumstances surrounding what would otherwise appear to be commercialization outside the grace period. See *Smith & Griggs Mfg. Co. v. Sprague*, 123 U.S. 249, 8 S.Ct. 122, 31 L.Ed. 141 (1887); *D.L. Auld*, 714 F.2d at 1150, 219 USPQ at 17; *In re Dybel*, 524 F.2d at 1400, 187 USPQ at 598, and cases cited therein. The possibilities of such circumstances cannot possibly be enumerated. If the inventor had merely a conception or was working towards development of that conception, it can be said there is not yet any "invention" which could be placed on sale. A sale made because the purchaser was participating in experimental testing creates no on-sale bar. See, e.g., *Great Northern*, 782 F.2d at 165, 228 USPQ at 358.

V

The issue of whether an invention is on sale is a question of law. *Barmag*, 731 F.2d at 836-37, 221 USPQ at 565-66. Because the Claims Court's factual findings are not disputed, and the issue may be resolved by application of the proper rule of law to those findings, we need not remand. *Icicle Seafoods, Inc. v. Worthington*, 475 U.S. 709, 106 S.Ct. 1527, 1530, 89 L.Ed.2d 739

(1986); *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1565, 1 USPQ 2d 1593, 1595 (Fed.Cir.1987).

UMC made a definite offer to sell its later patented UMC-B accelerometer to the Navy more than one year prior to the date of the application for the patent in suit. In its bid, UMC specified a price of \$404.00 for each sensor component of the ACA and \$271.00 for the compatible recorder component. The total contract price was in excess of \$1.6 million. This written offer which revealed use of the analog transducer in the ACA was supplied on July 27, 1967. UMC admits that the offer it made was for profit, not to conduct experiments.

UMC's activities evidence, at least *prima facie*, an attempt to commercialize the invention of the '513 patent by bidding on a large government contract more than one year prior to the filing of the underlying application and thereby to expand the grace period in contravention of the policies underlying the statute. See *Gould Inc. v. United States*, 579 F.2d 571, 583, 198 USPQ 156, 167 (Ct.Cl.1978).

Countering the *prima facie* case, UMC offers only the purely technical objection that no complete embodiment of the invention existed at the time of the sale. In this case, that circumstance is unavailing when we look at the realities of the development of this invention. While UMC asserts that its improved ACA required further "development," as evidenced by its seeking a waiver of the liquidated damages provision in the RFP, that fact might weigh in UMC's favor if UMC had sought by convincing evidence to prove that the primary purpose of the sale was for experimental work. However, the contract was not a research and development contract, and UMC admits that the offer it made was for profit, not to conduct experimental work.

We do not attempt here to formulate a standard for determining when something less than a complete embodiment of the invention will suffice under the on-sale bar. However, the development of the subject invention was far beyond a mere conception. Much of the invention was embodied in tangible form. The prior art devices embodied each element of the claimed invention, save one, and that portion was available and had been sufficiently tested to demonstrate to the satisfaction of the inventor that the invention as ultimately claimed would work for its intended purpose. Thus, we conclude from the unchallenged facts with respect to the commercial activities of UMC, coupled with the extent to which the invention was developed, the substantial embodiment of the invention, the testing which was sufficient to satisfy the inventor that his later claimed invention would work, and the nature of the inventor's contribution to the art, that the claimed invention was on sale within the meaning of section 102(b).

Accordingly, we hold all claims of the '513 patent invalid. That issue being determinative of the case, we vacate the remainder of the Claims Court opinion.¹⁰

Affirmed on Different Grounds.

Vacated-In-Part.

10. Prior to release of this opinion, an active judge called for a vote for *in banc* consideration. The request failed to receive a favorable majority of the votes of the active judges.

EDWARD S. SMITH, *Circuit Judge*, dissenting.

— This panel majority opinion ignores the issues raised in these cross-appeals, and which were decided in the Claims Court, in order to frame its own question *whether* a reduction to practice *should* be required for application of the on-sale bar provided in section 102(b). It then proceeds to answer its own question in the negative. The trial judge and all parties herein had proceeded, as have countless parties and judges before them, on the premise that reduction to practice is so required. The Claims Court held that under such precedent law of this circuit, there was a reduction to practice, but that for other reasons the on-sale bar did not apply and the '513 patent was not invalid under section 102(b). The Claims Court also held that the '513 patent was not invalid for obviousness under section 103. Finally, the Claims Court held that the charge of infringement would not prevail because the Government did not make use of the device covered by appellant's '513 patent.

The panel majority does not even reach the issues of infringement and obviousness, presented at length by the parties. Having strained the issues that *are* on appeal into a form of issue neither raised nor briefed by the parties, the panel majority then interprets prior cases in this court and its predecessor courts as only "appearing" to assume the requirement of reduction to practice but not having "specifically," or "explicitly," or "squarely" addressed the question the panel majority itself raised *sua sponte*. *Voila!* Two judges of the court are now free to disembody a fundamental principle of patent law which a respectable body of precedent holds to exist.

Why must we do this in this way? Is our ruling in *South Corporation v. United States*¹ mere window-dressing? Is a representation that the case law of *other* courts is not uniform a valid reason to support our squeezing around *South Corporation*, an opinion that does not concern "other" courts?

In light of the panel majority opinion, the questions being decided today are in reality whether a 3-judge panel is bound by our own precedent, and whether the precedent jurisprudence of this court requires a reduction to practice by the critical date. The answer to both questions is "yes."

STARE DECISIS

The objective of the *South Corporation* holding is disserved by strained and unnecessary interpretations in lieu of in banc action.

Since *South Corporation* was decided, that case has frequently received its 1-line citation and 1-sentence description as having adopted the jurisprudence of our predecessor courts, which jurisprudence can not be overruled except by the court sitting in banc. We may not yet have arrived where it should be necessary to repeat in full the opinion of *South Corporation* in a footnote or appendix so that its significance will be conveniently remembered, but it is appropriate at this point to recall that decision more fully in order to emphasize its real force and effect.

On the merits, *South Corporation* involved in part the imposition of a duty on foreign repairs costing \$98.40 to the motor vessel "North Seal." A minimum of

1. *South Corp. v. United States*, 690 F.2d 1368, 215 USPQ 657, 1 Fed.Cir. (T) 1 (1982).

perspicacity is required to observe that the principle of stare decisis in this court is in much greater danger of slipping beneath the waters as a result of this panel majority opinion than was the good ship *North Seal*. Once before I protested that our precedent, even *if* ready for change, was being allowed to slip silently into the backwaters of the law simply by ignoring it.² It is not important whether the present disposition is in fact only the second time that stare decisis is being allowed to go down, for it is clear that if it does, the importance of *South Corporation* will be submerged permanently without the necessity of waiting for the traditional third time under.

Procedurally, *South Corporation* deals with the importance which attaches to stability of the law, with which everyone, including the majority, agrees. That opinion contains language which all of us should recall from time to time. Especially the words of the Supreme Court, quoted therein, should be remembered:³

Very weighty considerations underlie the principle that courts should not lightly overrule past decisions. Among these are the desirability that the law furnish a clear guide for the conduct of individuals, to enable them to plan their affairs with assurance against untoward surprise; the importance of furthering fair and expeditious adjudication by eliminating the need to relitigate every relevant proposition in every case; and the necessity of

2. *SSIH Equip. S.A. v. U.S. Int'l Trade Comm'n*, 718 F.2d 365, 389, 218 USPQ 678, 697, 1 Fed.Cir. (T) 90, 118 (1983) (Smith, J., dissenting).

3. *South Corp.*, 690 F.2d at 1370, 215 USPQ at 658, 1 Fed.Cir. (T) at 2-3, quoting *Moragne v. States Marine Lines, Inc.*, 398 U.S. 375, 403, 90 S.Ct. 1772, 1789, 26 L.Ed.2d 339 (1970).

maintaining public faith in the judiciary as a source of impersonal and reasoned judgments.

Our past decisions consistently have held, as a threshold requirement for the section 102(b) on-sale bar, that a device must be in existence and shown to work for its intended purpose (the classical definition of reduction to practice) before the on-sale bar can apply.⁴ The panel majority does not seriously dispute that this has been the law of the circuit, the law of our predecessor courts, and the law of the land, for 150 years. Today, the panel majority ignores the significance of decades of discussion of "reduction to practice" as if it does not exist, and eliminates the reduction to practice requirement for the on-sale bar.

Of course the 2-judge majority does not overrule this court's precedent. At best it can muddy the water for similar fact situations.

SECTION 102(b) AND THE '513 PATENT

There is clear precedent that the on-sale bar requires, 1 year prior to the filing of a patent application: (1) the complete invention claimed must be embodied in or obvious in view of the thing offered for sale; (2) the thing offered for sale must be reduced to practice; and

4. One commentator, who has argued vigorously for elimination of the reduction to practice requirement, candidly has admitted "*all the cases found* have held that an invention can be 'on sale' so as to commence the running of the one-year grace period only after the claimed invention has been actually reduced to practice." (Citing CCPA cases; emphasis supplied.) 1 I. KAYTON, PATENT PRACTICE 4-15 (1985).

(3) there must be a definite sale or offer for sale, primarily for profit rather than for experimental purposes.⁵

The panel majority correctly holds that the thing offered for sale by UMC was not reduced to practice by the critical date. That should be the end of the inquiry. The law is clear, and the parties agree, that the on-sale bar cannot be invoked without a reduction to practice. The panel majority, however, without being asked by the parties, asks whether reduction to practice "should" be required for the on-sale bar, and concludes that there should be no such requirement, notwithstanding the binding precedent to the contrary.

HISTORY OF SECTION 102(b)

Section 102(b)⁶ is in the nature of a statute of limitations, enacted to implement the policy that those who seek the benefits of the patent grant must act promptly after the invention has been placed in possession of the public. Failure to act within 1 year forfeits the opportunity to obtain a patent.

As in statutes of limitation generally, the start of a statutory bar must be reasonably clear at the time it occurs. Although statutes of limitation are inflexible, courts have hesitated to include in their measure time during when the claimant did not know, or have reason

5. *In re Corcoran*, 640 F.2d 1331, 1333-34, 208 USPQ 867, 870 (CCPA 1981); *Barmag Barmer Maschinenfabrik AG v. Murata Mach., Ltd.*, 731 F.2d 831, 835, 221 USPQ 561, 564 (Fed.Cir.1984).

6. 35 U.S.C. §102(b) (1982).

to know, that the cause was accruing.⁷ The long history of section 102(b), which effects the irretrievable loss of a valuable right, shows judicial and congressional recognition of this need for reasonable certainty.⁸

It was never the purpose of section 102(b) to force premature entry into the patent system upon inventors who are still developing their inventions. The public interest is not served by a system that wastes the resources of inventors:⁹

an inventor may wait * * * until he learns whether his invention is of enough value to justify an application for a patent * * * [and] may test it, not only to put it into definitive form, but to see whether his ideas are worth exploiting[.]

or by "the waste of Patent Office resources in processing halfbaked inventions."¹⁰

7. See, e.g., *Urie v. Thompson*, 337 U.S. 163, 169, 170, 69 S.Ct. 1018, 1024, 93 L.Ed. 1282 (1949) (although "traditional purposes of statutes of limitations * * * require the assertion of claims within a specified period of time after notice of the invasion of legal rights," action not barred because injury was "unknown and inherently unknowable").

8. See *Andrews v. Hovey*, 123 U.S. 267, 3 S.Ct. 101, 105, 31 L.Ed. 160 (1887) ("purpose of [section 102(b)'s predecessor] was to fix a period of limitation which should be certain"). See also S.REP. NO. 876, 76th Cong., 1st Sess. 1 (1939), and H.R.REP. NO. 961, 76th Cong., 1st Sess. 1 (1939), discussing the legislation that reduced the period of limitation from 2 years to 1, stating Congress' intent that the invention be "fully completed" before the bar starts to accrue. (Emphasis supplied). So rigorous and short a period of limitation requires no less.

9. *Aerovox Corp. v. Polymet Mfg. Corp.*, 67 F.2d 860, 862, 20 USPQ 119, 121 (2d Cir.1933) (L.Hand, J.).

10. *Gould Inc. v. United States*, 579 F.2d 571, 584, 217 Ct.Cl. 167, 198 USPQ 156, 168 (1978) (Nichols, J., dissenting).

The variety of situations which have arisen under section 102(b) required early judicial attention, from which evolved the present minimum standard. Courts had early turned to the interference concept of reduction to practice¹¹ as a threshold condition in determinations of public use or sale. Courts drew a pragmatic line whereby an invention that was still merely a conception or idea would not be barred by section 102(b) before the invention had been "made" in the patent sense.

Reduction to practice was thus recognized as a minimum legal standard:¹²

The concept that an invention must be operable and reduced to practice before it can be deemed "on sale" * * * is rooted in scientific reality and simple common sense * * *.

This requirement for an operable invention is in tune with the purpose of the patent system to encourage and patent useful inventions, not bare ideas.

Even after an invention was reduced to practice in the interference sense, courts recognized that the invention still may not have reached the stage at which a

11. The phrase "reduction to practice" arose in connection with priority determinations in interference contests. For discussion of this origin in determining priority between conflicting inventors, see 1 W.C. ROBINSON, *THE LAW OF PATENTS* 529-60 (1890). In its historical development this phrase was applied to inventions at the first flush of positive results, as inventors attempted to obtain the earliest possible priority date. " 'Reduction to practice' [was] not [originally] a statutory phrase. It [was] a phrase coined by the tribunals to indicate what may be proof of completion of the invention." 1 W.F. ROGERS, *THE LAWS OF PATENTS* 47 (1914). Today its only statutory appearance is in 35 U.S.C. § 102(g), that section directed to priority of inventorship.

12. *Digital Equip. Corp. v. Diamond*, 653 F.2d 701, 718 n.21, 210 USPQ 521, 540 n.21 (1st Cir. 1981).

section 102(b) bar could fairly attach: "The work of the inventor must be finished, physically as well as mentally. Nothing must be left for the inventive genius of the public * * *."¹³ The invention must be placed "into the hands of the public in a condition for immediate use, requiring no further speculation or experiment * * * for the accomplishment of its intended ends."¹⁴

Constant throughout this history is the *minimum* requirement that a device be shown to work for its intended purpose before the bar starts to run. All of this precedent describes reduction to practice as a minimum requirement, not as a superfluous one. Any change should be well considered. Such change cannot be effected by treating the requirement as if it has never existed.

SECTIONS 102(b)/103

I agree with the panel majority that, for purposes of sections 102(b)/103, it is not required that the *claimed* invention must be reduced to practice and offered for sale. It is sufficient that the claimed invention "must have been embodied in *or obvious in view of the thing*

13. 1 W.C. ROBINSON, THE LAW OF PATENTS 183 (1890).

14. *Id.* at 179-80. Compare *McDonnell Douglas Corp. v. United States*, 208 USPQ 728, 733 (Ct.Cl. 1980) (Computer simulation of missile invention made reduction to practice appear inevitable.), with *McDonnell Douglas Corp. v. United States*, 670 F.2d 156, 161-63, 229 Ct.Cl. 323, 214 USPQ 857, 860-62 (1982) (Actual physical testing demonstrated significant flaws in missile design unrevealed by computer simulation. "It is not unimportant that eight of the first nine test flights failed to hit the target." Held: no reduction to practice until physical tests showed capability of actual working.).

offered for sale.”¹⁵ (Emphasis supplied.) “Complete readability of the claim on the thing offered is not required because whatever is published (or on sale) more than one year prior to the filing of a patent application becomes part of the prior art over which the claim must be patentable.”¹⁶ In applying sections 102(b)/103, it is the “thing offered” which must have been reduced to practice, that is, one of the “things” must have been completed or built and shown to work, prior to the critical date.¹⁷

In *In re Corcoran*,¹⁸ the CCPA had no difficulty in applying the sections 102(b)/103 bar to the claimed invention of a pre-slit window shade material with tabs and mounted on a roller. The thing offered for sale was only the pre-slit window shade material, without the tabs or roller. Thus, the patent claims did not read on the thing offered for sale. The offer was accompanied by actual samples of the material, which the CCPA held to be in “commercially marketable” form, *i.e.*, completed and reduced to practice. The CCPA held that the material placed on sale must be treated as section 102(b) prior art which would have made the claimed invention obvious under section 103.

15. *Corcoran*, 640 F.2d at 1333-34, 208 USPQ at 867 (quoting *Timely Products Corp. v. Arron*, 523 F.2d 288, 302, 187 USPQ 257, 267-68 (2d Cir. 1975)).

16. *Id.*

17. *Id.* In *Timely Products*, the “thing offered” was a sock which “had been made and successfully tested,” *i.e.*, reduced to practice. The patent claims did not read on the sock offered; nevertheless, the court treated the sock as § 102(b) prior art making the claimed invention obvious under § 103.

18. *Corcoran*, 640 F.2d 1331, 208 USPQ 867.

In *In re Foster*,¹⁹ involving a printed publication in "Industrial and Engineering Chemistry," the CCPA applied the published invention as a section 102(b) prior art reference which would have made the *claimed* invention obvious under section 103. The CCPA held that the prior art invention had been completed, *i.e.*, reduced to practice, before the date of the disqualifying publication (as attested by a Rule 131 affidavit, and as asserted in the publication itself).²⁰

The difficulty postulated by the panel majority, that sections 102(b)/103 could not be applied if the thing offered must be reduced to practice, fails to materialize in real life. The first inquiry is whether the *thing offered* has been reduced to practice by the critical date and, thus, become prior art under section 102(b). Reduction to practice has occurred if one of the "things" offered has ever been completed or built and shown to work. Only then is it necessary to compare the *claims* to the prior art for determination of obviousness under section 103.²¹

In the present case, the Claims Court applied a prototype as prior art against UMC's claimed invention, but held that the claimed invention would not have been obvious in view of the prototype. Similarly, if the thing

19. *In re Foster*, 343 F.2d 980, 988, 145 USPQ 166, 173 (CCPA 1965), *cert. denied*, 383 U.S. 966, 86 S.Ct. 1270, 16 L.Ed.2d 307 (1966).

20. *Foster*, 343 F.2d at 986, 145 USPQ at 171.

21. See *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 693, 15 L.Ed.2d 545, 148 USPQ 459, 467 (1966) (First, "the scope and content of the prior art are to be determined." Then, the "differences between the prior art and the claims at issue are to be ascertained."); *Corcoran*, 640 F.2d at 1334, 208 USPQ at 870 (The thing offered for sale existed in "commercially marketable" form as shown by actual samples, *i.e.*, reduced to practice, even though the patent claims did not read on the thing offered.).

offered on July 27 had been reduced to practice, the thing offered would have been available as prior art against UMC's claimed invention under sections 102(b)/103. However, the thing offered was not reduced to practice by the critical date, and it did not become part of the prior art under sections 102(b)/103.

BINDING PRECEDENT: NO REDUCTION TO PRACTICE; ON-SALE BAR REJECTED

I must respectfully differ with the panel majority in the interpretation of several cited cases in our prior jurisprudence, in which the requirement of a reduction to practice was a critical element in the decision to apply or not apply the on-sale bar.

In *In re Dybel*,²² the CCPA held that an on-sale bar could not be sustained because the thing offered had not been reduced to practice prior to the critical date. The CCPA reasoned that an "invention" does not exist until it has been reduced to practice, and an invention cannot be said to be "on sale" until it has come into existence:²³

The board relied on the executory contract of sale, which had been entered into prior to the critical date. However, for an invention of the type involved here to be "on sale," it must be complete at least to such an extent that the purchaser knows how it will perform. The record fails to show that the invention was complete or that either appellant or Ford knew how the invention would perform at the time it was installed.⁸

⁸Moreover, "the invention" was not in existence before it was actually installed on the Ford press since the claims required the press and electronic circuit as well as the transducer. [Citation omitted.]

22. *In re Dybel*, 524 F.2d 1393, 1400-01, 187 USPQ 593, 598 (CCPA 1975).

23. *Id.*

In *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*,²⁴ the Federal Circuit held that a "bare offer to sell" did not create an on-sale bar, because the thing offered had not been reduced to practice prior to the critical date. The Federal Circuit approved a jury instruction that "the section 102 bar applies to 'a completed invention that has been shown to be commercially useful for the purpose intended.' " "The jury instruction focused attention on the factual question critical to this case, that is, whether the offers of sale involved 'functional machines and processes.' " The Federal Circuit concluded that the on-sale bar was not satisfied, because "a reasonable jury could have found that the apparatus and method of the claims were not functional" by the critical date.²⁵

In *Great Northern Corp. v. Davis Core & Pad Co.*,²⁶ the Federal Circuit held there was no "on sale" bar because the invention was still being tested and had not been reduced to practice prior to the critical date. The Federal Circuit rejected the defendant-appellant's contention that actual transfers of the foam supports to a third party "without restriction and with intent to sell" created an on-sale bar under section 102(b). The lack of a reduction to practice was determinative: "The district court concluded, correctly we hold, that the invention was not reduced to practice until after February 28, 1977, and, therefore, the testing prior to that date did not constitute a § 102(b) bar."

24. *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 622-23, 225 USPQ 634, 638-40 (Fed.Cir.), cert. dismissed, ___U.S. ___, 106 S.Ct. 340, 88 L.Ed.2d 326 (1985).

25. *Id.*

26. *Great Northern Corp. v. Davis Core & Pad Co.*, 782 F.2d 159, 164-65, 228 USPQ 356, 358 (Fed. Cir.1986).

BINDING PRECEDENT: REDUCTION TO PRACTICE; ON-SALE BAR APPLIED

In *In re Theis*,²⁷ the CCPA required (and found) a reduction to practice before applying a section 102(b) on-sale bar:

It suffices that the claimed invention, *reduced to practice*, was placed on sale, i.e., offered to potential customers, prior to the critical date. * * * Even if no delivery is made prior to the critical date, the existence of a sales contract prior to that date has been held to constitute an "on sale" status for the invention *if it has been reduced "to a reality."*
* * * [Emphasis supplied; citations omitted.]

The CCPA rejected the applicant's contention that the thing offered for sale was "inoperative," affirming the board's finding that the claimed invention had been reduced to practice prior to the critical date.

In *In re Caveney*,²⁸ the Federal Circuit held that "[a]n offer to sell a *completed invention* is sufficient to support a rejection under 35 U.S.C. §102(b)." (Emphasis supplied.) In *Caveney*, the invalidating offer for sale was accompanied by actual samples, or physical embodiments, of the claimed invention.²⁹

27. *In re Theis*, 610 F.2d 786, 791-92, 204 USPQ 188, 192-93 (CCPA 1979).

28. *In re Caveney*, 761 F.2d 671, 675, 226 USPQ 1, 3 (Fed.Cir.1985) (citing *Barmag* wherein it was stated that "an invention is 'complete' if reduced to practice" 731 F.2d at 838, 221 USPQ at 567).

29. *Caveney*, 761 F.2d at 675, 226 USPQ at 3.

In *In re Brigance*,³⁰ the Federal Circuit affirmed the board's use of an on-sale bar, where the board found "both a complete *reduction to practice* of the Inventory and an offer to sell the Inventory prior to the critical date." (Emphasis supplied.) On appeal, the applicant vigorously contested the finding of a reduction to practice. The Federal Circuit rejected the applicant's argument because the record showed that "a fully marketable embodiment of the claimed invention existed, and was placed on sale prior to the critical date."³¹

In *Western Marine Electronics, Inc. v. Furono Electric Co.*,³² the Federal Circuit held the district court correctly applied an on-sale bar, where the district court found, prior to the critical date, an offer to sell a physical embodiment with every element of the claims present, complete, functional, and requiring no further testing:³³

In answer to Wesmar's *reduction to practice* argument, we reply that the district court properly looked to the totality of circumstances in determining that the claimed invention, *as embodied in a structure meeting all the elements of the claim*, was on sale prior to the critical date. The district court found the sonar system "*complete*" well before the critical date. * * * [Emphasis supplied.]

30. *In re Brigance*, 792 F.2d 1103, 1107, 229 USPQ 988, 990 (Fed.Cir.1986).

31. *Id.*, 792 F.2d at 1109, 229 USPQ at 992.

32. *Western Marine Elecs., Inc. v. Furono Elec. Co.*, 764 F.2d 840, 844-47, 226 USPQ 334, 337-39 (Fed.Cir.1985).

33. *Id.*, 764 F.2d at 845, 226 USPQ at 338.

In *General Electric Co. v. United States*,³⁴ the Court of Claims questioned the reduction to practice requirement for the on-sale bar, but it concluded that resolution of that question was unnecessary because the trial division had found that the invention was reduced to practice, shown to be operable and commercially useful, and offered for sale, all prior to the critical date.

In *Barmag Barmer Maschinenfabrik AG n. Murata Machinery, Ltd.*,³⁵ the Federal Circuit affirmed the use of an on-sale bar where the district court found (1) an existing physical embodiment of the claimed invention (a textile processing machine) was offered for sale prior to the critical date; (2) the claimed invention was "reduced to practice" prior to the critical date; and (3) the machines were on sale for profit, not for experimentation. The Federal Circuit questioned whether a physical embodiment should always be required for a reduction to practice, but concluded that resolution of that question was unnecessary because the district court had found both a physical embodiment *and* a reduction to practice.

In *D.L. Auld Co. v. Chroma Graphics Corp.*,³⁶ the Federal Circuit held that an on-sale bar applied to a method, where the method was reduced to practice and a product produced by the method was offered for sale prior to the critical date. The appellant argued that reduction to practice had not occurred prior to the

34. *General Elec. Co. v. United States*, 654 F.2d 55, 60-64, 211 USPQ 867, 871-75 (Ct.Cl.1981).

35. *Barmag*, 731 F.2d 831, 221 USPQ 561; *see also* *J.A. LaPorte, Inc. v. Norfolk Dredging Co.*, 787 F.2d 1577, 229 USPQ 435 (Fed.Cir.), *cert. denied*, ___ U.S. ___, 107 S.Ct. 274, 93 L.Ed.2d 250 (1986).

36. *D.L. Auld Co. v. Chroma Graphics Corp.*, 714 F.2d 1144, 219 USPQ 13 (Fed.Cir.1983).

critical date. The Federal Circuit reviewed the uncontradicted "*crucial testimony* that every step of the claimed method was followed in producing emblems offered," which testimony "establish[ed] *reduction to practice* of the claimed method."³⁷ (Emphasis supplied.)

In *King Instrument Corp. v. Otari Corp.*,³⁸ the Federal Circuit affirmed an on-sale bar under section 102(b) because "the district court properly relied on two factors as evidence of 'on sale': (1) a sale or offer of sale of the invention, and (2) an existing *reduction to practice* of the invention by the time of the offer." (Emphasis supplied.) The Federal Circuit reviewed in detail the findings of fact supporting the prerequisite that the invention had been reduced to practice prior to the critical date.

EFFECT OF ELIMINATING THE REDUCTION TO PRACTICE REQUIREMENT

It is the users of the patent system who will suffer the impact of a panel majority decision. The question is not theoretical. It is of great practical importance.

Those inventors who have sought financing, or who have contacted potential customers, or who have engaged in other normal business activities before they have made a workable device will not know how the time limit for filing a patent application will be measured or where the line will be drawn between raw idea and proved invention. Inventors do not normally try to patent something they have not yet found workable. The patent law, and particularly section 112, does not favor it. Most

37. *Id.*, 714 F.2d at 1151, 219 USPQ at 18.

38. *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 860, 226 USPQ 402, 406 (Fed.Cir.1985), *cert.*, *denied*, ___U.S. ___, 106 S.Ct. 1197, 89 L.Ed.2d 312 (1986).

inventors do not hire a patent lawyer until they know they have something that works, by which time, according to the panel majority, it may be too late.

The panel majority does not seem troubled by the prospect that, in accordance with its view, a concept barred under section 102(b) before the invention has been completed is forever foreclosed from the patent system. In its zeal to prevent such inventors from salvaging even narrow patent rights by "deft claim draftsmanship," the majority removes the minimum standard by which courts have heretofore measured the on-sale bar. It is not clear why this change is being wrought on the community of inventors and on the public without providing some alternative measure of certainty. The "all circumstances" rule evoked by the panel majority means that the critical question in more and more cases can only be answered with finality by a judicial determination in which there is no further appeal.

As the technology community will attempt to cope with this decision, it perforce will file more "paper patents": patents on sketchy concepts, before they have been reduced to practice and before the inventor knows whether or how the invention will work, or whether it is worth developing.

It is the details of how to make and use an invention that are of value in the patent disclosure. Bare ideas are not patentable. Paper patents, prematurely filed, eviscerate the value of patent disclosures because they necessarily contain untested, speculative details. Paper patents merely add to the clutter of unproved patents in the PTO and in the courts, requiring fees, examinations, lawyers, trials and appeals, all of which disserve both the inventing and the using communities.

The UMC patent at issue was described by the Claims Court as a "paper patent." This attribute, which the panel majority will now encourage, was held against the patentee in the Claims Court's finding of noninfringement. This is a "Catch 22" situation.

Further, we have held that a "paper patent," if insufficient under section 112, cannot provide priority for a continuation-in-part (CIP) application. Thus, even a paper patent may not save an inventor who recognizes the UMC trap and tries to cope with it by premature filing.

The section 102(b) bar was not intended to force inventors into the patent system prematurely. It was intended to force the inventor to file, if at all, within a reasonable time (1 year) after the inventor starts to profit from or discloses or uses the invention. The moving of the time bar does not speed up the invention development process; it merely entraps the inventor.

Industry does not commit time and money to the development of a technological idea without some marketplace investigation. Many businesses, especially small ones, seek customers for future delivery, before or while they are working out the technological details. The patent system should accommodate the ways of the real world, not place new pitfalls in the way of normal business pursuits.

CONCLUSION

This court, its predecessor courts, and numerous other courts, have held there is *not* an on-sale bar where the thing offered for sale was *not* reduced to practice by the critical date. When the courts *have* applied an on-sale bar, they have required that the thing offered for sale *must* be reduced to practice by the critical date. The

precedent law cannot be read as merely "appearing" to assume the requirement in question. The panel majority does not write on a *tabula rasa*. The majority ignores binding precedent when it makes the conflicting holding that an on-sale bar may be applied without a reduction to practice.

I respectfully submit that precedent alone is sufficient reason to hold that an on-sale bar was not triggered by UMC's July 27, 1967, offer because the thing offered was not reduced to practice 1 year prior to the filing of UMC's patent application. I would affirm the Claims Court's holding that the UMC patent is not invalid under section 102(b) or sections 102(b)/103, and I would decide the other issues presented on appeal.

OPINION OF THE UNITED STATES CLAIMS COURT
(AUGUST 2, 1985)

In the United States Claims Court
No. 335-80C

UMC ELECTRONICS COMPANY	)	Patent validity; an-
	)	ticipation; obvious-
v.	)	ness; prior use or
	)	sale; infringement;
THE UNITED STATES	)	scope of claims.

OPINION

MARGOLIS, *Judge*.

Pursuant to 28 U.S.C. § 1498(a), the plaintiff brought this action to recover reasonable and entire compensation for infringement of its patent by the United States. The defendant argues that it has not infringed the patent and that the patent is invalid. During a four-day trial the parties presented evidence and testimony to a judge of this court, who retired without having made findings of fact or conclusions of law. The parties have waived a new trial and have submitted post-trial briefs. After hearing oral argument on those briefs and considering the entire record, the Court finds that the plaintiff's patent is valid but not infringed.

BACKGROUND

A. *Navy Procurements*

On February 22, 1972 Preston R. Weaver was issued the patent in suit, U.S. Patent No. 3,643,513 (the

'513 or Weaver patent). Weaver assigned his patent to the plaintiff, UMC Electronics Company (UMC). The patent discloses an aviation counting accelerometer (ACA) that employs an analog transducer, a motion sensing device that emits an analog signal (voltage) proportional to force or stress experienced by a motion sensing element. A complete ACA senses and records the acceleration load levels that aircraft undergo during inflight maneuvers. It should record only acceleration loadings caused by maneuvers and ignore parasitic or transient acceleration signals — that is, vibrations caused by such things as gusts of wind, firing weapons, and the aircraft's engine. Records of load levels of acceleration can indicate an aircraft's remaining useful life and show the need for structural overhaul or rotation to different service, *e.g.*, from combat to reconnaissance.

Before the plaintiff entered the ACA field, the U.S. Navy procured its ACA's under military specification Mil-A-22145 from the Maxson Electronics Corporation and from Giannini Controls Corporation, which has become part of the Conrac Corporation. These ACA's use electromechanical transducers to generate *mechanical* signals that indicate levels of acceleration. In such transducers, a seismic mass moves in response to input acceleration, deflecting a spring suspension by a distance proportional to the acceleration. As the mass moves, it touches probes or draws a brush across a set of contacts that are positioned to open and close circuits representing present acceleration levels. The output voltage does not vary with acceleration.

The natural frequency of the mass-spring system limits the ability of the electromechanical transducers to filter out high-frequency acceleration loadings that represent vibrations. But an analog transducer, like the one

used in the plaintiff's device, generates a varying *electrical* signal that can be filtered electronically to remove superimposed vibrations.

Personnel at the Naval Air Development Command were never happy with either the Maxson or Giannini ACA's because they recorded data that defied common sense, failed to count accelerations, or counted accelerations that never occurred. In November of 1964 the Navy's Aeronautical Structures Laboratory analyzed the Navy's ACA systems and found that twenty-five percent of the Giannini units and thirty-three percent of the Maxson units miscounted. As a result of this study, the Navy proposed to remove Maxson ACA's from its Qualified Products List.

In early 1966, employees of the Navy's Aircraft Structures Laboratory contacted Weaver, who was then working from UMC. They told him they were having problems with their ACA's and showed him examples of faulty ACA data. They informed him that the Navy needed additional ACA's and wanted to buy more accurate ones. Transcript (Tr.) at 24-25, 29.

Later in 1966 the Navy issued requests for proposals to supply ACA's that met military specification Mil-A-22145A. On August 25, 1966, UMC submitted a proposal to build such a device (the UMC-A). The UMC-A contains an electromechanical transducer. On December 1, 1966 the Navy awarded UMC a contract to supply approximately 1,600 UMC-A model accelerometers.

In early 1967 UMC discovered that it could not build the UMC-A to meet the static calibration requirements of the specification (that is, when subjected to the same acceleration load on different occasions, the device sometimes counted and sometimes failed to count). In order to prevent UMC from losing the contract, Weaver

began work on a different accelerometer between mid-April and mid-May of 1967. This accelerometer (the UMC-B) used an analog transducer, as does the device that Weaver eventually patented. Weaver satisfied himself that the UMC-B could function by building and testing an engineering prototype.

On May 22, 1967 the Navy issued a new ACA specification, Mil-A-22145B, which superceded Mil-A-22145A. In July it issued a request for proposals to deliver ACA's built to the new specifications, RFP N00383-68-R-0001 (RFP '0001). UMC responded to this request on July 27, 1967 with a letter describing an ACA that uses an analog transducer. On August 2, 1967 UMC submitted a technical proposal, and on August 9, 1967 UMC demonstrated a prototype of the UMC-B to the Navy. The Navy later cancelled the UMC-A contract for default.

Early in 1968 the Navy cancelled RFP '0001, and on July 12, 1968 it issued another invitation for bids to supply ACA's. Thirteen companies submitted technical proposals, ten of which the Navy rejected in the first step of the procurement. On November 29, 1968, as the second step, the Navy issued an invitation to three companies: UMC, Aerodyne Controls Corporation, and Systron-Donner Corporation (SDC). SDC won the contract. UMC has never produced the device disclosed by the Weaver patent.

Since 1970 the Navy has procured ACA's from only one manufacturer, SDC. The SDC ACA employs an analog transducer. The plaintiff asserts that the SDC ACA infringes the Weaver patent.

B. Weaver's Invention

In the plaintiff's device, an analog transducer generates an electric current proportional to the acceleration

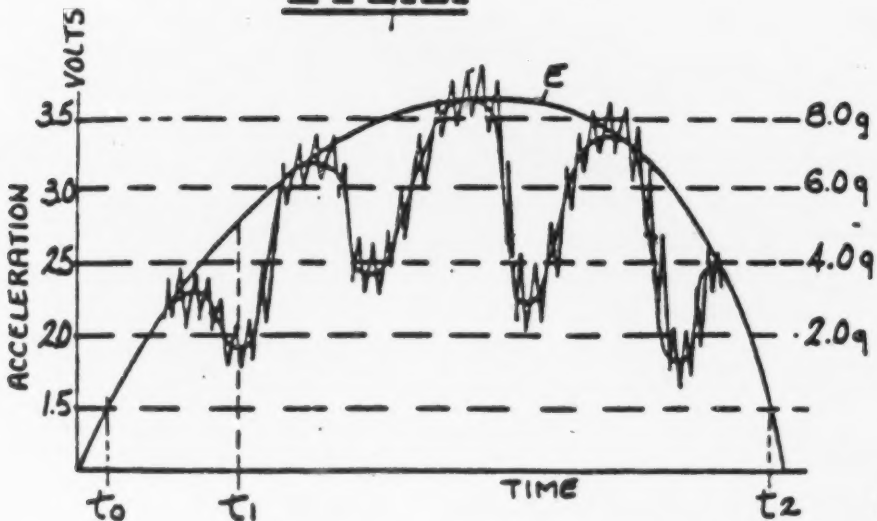
experienced by the aircraft on which the device is mounted. A filter eliminates transient accelerations from the current, which passes to five voltage dividers (components 45-49 on Figure 4 of the '513 patent). The dividers determine if the current has exceeded certain levels, the "reset level" and load levels 1-4 (LL1-LL4). Each load level signifies a higher acceleration load. See Figure 3, which illustrates the relation between acceleration and voltage.

When the electrical signal rises to the reset level, the output of amplifier 45b activates timer 53, which begins a timing cycle (point t_0 on Figure 3). As the signal reaches LL1-LL4, it successively activates amplifiers 46b-49b, each of which energizes a latch circuit 46c-49c. The latch circuits store the information that the aircraft has experienced a corresponding load level of acceleration. After timer 53 has completed a timing cycle it activates release gate 54, which allows gates 46d-49d to transfer the information stored in the latch circuits to the corresponding counters 46e-49e.

If the acceleration signal remains above the reset level at the end of a timing cycle, the appropriate counter will advance one half count when the gates relay the information stored in the latch circuits. For example, if the timing cycle ends at t_1 on Figure 3, counters 46e and 47e will advance one half count. After the timing cycle, when the current drops below the reset level, amplifier 45 deactivates. This opens reset switch 52, which resets latches 46c-49c. The counters then advance one full count. (If the current rises to a higher load level after the timer has activated the information release gate, the new information can pass immediately from the latches to the counters.) For example, at t_2 each of the counters will advance a full count. But if the current sinks below the reset level *before* the end of a timing cycle, amplifier 45b deactivates. Reset switch 52 then turns off timer 53

and resets the latch switches 46c-49c, erasing the stored information. This timing cycle prevents the device from recording transient signals; the device records only accelerations that persist for a predetermined time or that build upon other accelerations that have persisted for a predetermined time.

FIG. 3.



INVENTOR

Preston R. Weaver

BY

Deals and Montgomery
ATTORNEYS

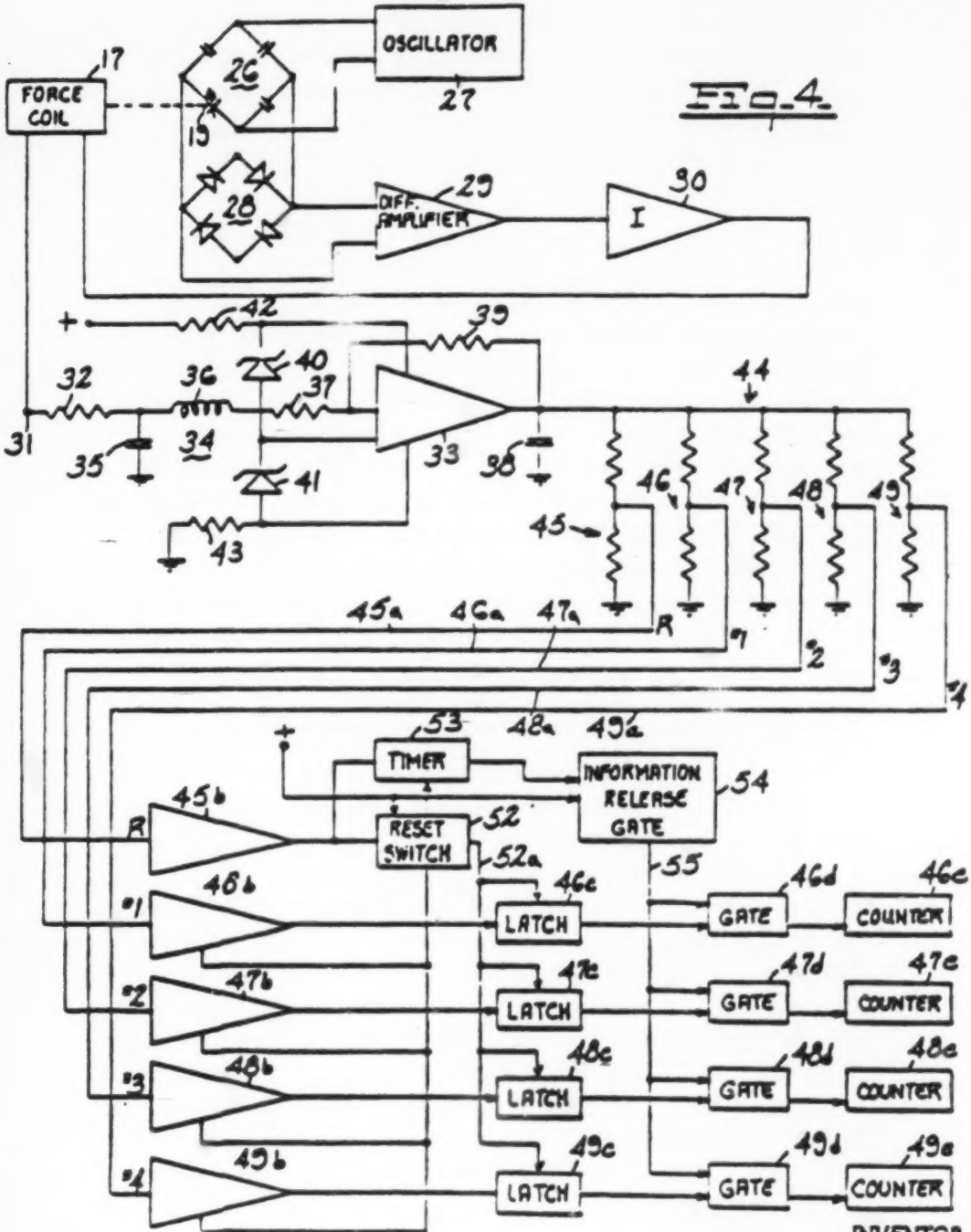


FIG. 4

INVENTOR

Preston R. Weaver

BY

Dealo and Montgomery
ATTORNEYS

VALIDITY

The defendant attacks the Weaver patent on the grounds that the device was anticipated, obvious, on sale more than a year before the application was filed, impracticable, and not invented by Weaver.

A. Anticipation

A person is not entitled to a patent if "the invention was known or used by others in this country . . . before the invention thereof by the applicant for patent." 35 U.S.C. §102(a). A patented invention is previously "known or used" only if a prior art reference shows each and every element claimed. *E.g.*, *General Electric Co. v. United States*, 215 Ct.Cl. 636, 678, 572 F.2d 745, 768 (1978). The defendant argues that the Weaver patent is invalid because its claims read on the Maxson, Giannini, and UMC-A devices. All these ACA's are prior art; none was brought to the attention of the patent examiner who reviewed Weaver's application.

The Weaver patent makes four claims. They appear below, each claimed means in a separate subparagraph on the left; on the right are the corresponding structures described in the specifications:

Claim Elements	Structure Shown on Figure 4 of the '513 Patent Corresponding to Claim Elements
1(a) An accelerometer for counting the number of times each of a plurality of acceleration maneuvering loadings of predetermined magnitude of an aircraft occur (sic), comprising	(a) A counting accelerometer comprising

Claim Elements	Structure Shown on Figure 4 of the '513 Patent Corresponding to Claim Elements
(b) means adapted to be mounted to an aircraft for sensing acceleration loading thereof,	(b) A transducer comprising casing (not shown), force coil 17, capacitance bridge 26, oscillator 27, diode bridge 28, and amplifiers 29 and 30,
(c) means providing a signal proportional to said accelerations, ¹	(c) A seismic mass comprising force coil 17 and capacitive displacement sensor (not shown), which supplies an output signal proportional to accelerations (Tr. 325-326; see also Defendant's Exhibit 17 at 6),
(d) a plurality of sensing and storing means each responsive to an acceleration signal reaching a different predetermined value for sensing such signal and storing an indication of the value reached,	(d) Amplifiers 46b-49b and corresponding latch circuits 46c-49c,

1. The plaintiff argues that the filter 34, 38-39 — not the motion sensing element — provides a signal proportional to acceleration, because the phrase "acceleration *maneuvering* loadings" in the preamble modifies the word "acceleration" in element 1(c) (though it does not modify the same word in 1(b)). The plaintiff also argues that the unfiltered signal would reflect transient accelerations and would not be proportional to maneuvering loadings; therefore, element 1(c) claims the filter and does not read on the cited prior art.

This strained linguistic argument does not persuade the Court. See, e.g., *Lemelson v. United States*, 752 F.2d 1538, 1551 (Fed.Cir. 1985). Furthermore, the filter appears in claim 2.

Claim Elements	Structure Shown on Figure 4 of the '513 Patent Corresponding to Claim Elements
(e) a plurality of acceleration level recording means,	(e) Counters 46e-49e,
(f) timing means for timing a predetermined cycle and furnishing a signal indicative of the end of said timing cycle,	(f) Timer 53,
(g) means responsive to an acceleration signal reaching a reference level for causing said timing means to initiate a timing cycle,	(g) Amplifier 45b,
(h) means responsive to said end of cycle signal arranged to pass a signal from each of said sensing and storing means to an associated one of said recording means.	(h) Information release gate 54.
2(i) The accelerometer of claim 1 further including means for filtering high-frequency components from the signal waveform.	(i) Filters 34 and 38-39 (Tr. 331; see also Tr. 275-277).

Claim Elements	Structure Shown on Figure 4 of the '513 Patent Corresponding to Claim Elements
3(e)(i) The accelerometer of claim 1 wherein said means for recording comprise a plurality of counters, each counter arranged to be advanced by one of said sensing and storing means,	(e)(i) Counters 46e-49e advanced by amplifiers 46b-49b and latch circuits 46c-49c,
(h)(i) said means for passing comprises a plurality of gates, each of said gates being arranged to apply an advance signal from one of said sensing and storing means to a respective one of said counters.	(h)(i) Although there is no antecedent basis for the "means for passing," the actual structure that applies signals from the latch circuits 46c-49c to the counters 46e-49e is gates 46d-49d.
4(j) The accelerometer of claim 1 further including means for sensing when the signal exceeds said reference value, and disabling said sensing and storing means if the signal falls below said reference value.	(j) Amplifier 45b and reset switch 52.

All the claims of the Weaver patent read literally on the Maxson, Giannini, and UMC-A devices, as the following chart shows. (See the schematic diagrams of these devices printed in the Appendix.)

Maxon (App. I)	Giannini (App. II)	UMC-A (App. III)
1(a) Intended purpose of Maxson ACA	1(a) Intended purpose of Giannini ACA	1(a) Intended purpose of UMC-A
(b) Transducer	(b) Transducer	(b) Transducer
(c) Spring and mass provide deflection proportional to applied acceleration.	(c) Spring and mass provide deflection proportional to applied acceleration.	(c) Spring and mass provide deflection proportional to applied acceleration.
(d) Several probes ride on surface of mass, closing contacts at different values of input acceleration. Silicon controlled rectifiers CR 4, 6, 8, & 10 store information that each load level has been reached.	(d) Several contacts at predetermined positions sense position of brush moving proportionally to acceleration. Relays K1-4 store information that load levels LL1-LL4 have been exceeded.	(d) Several probes ride on surface of mass, closing contacts at different values of input acceleration. Relays 1R-4R store information that predetermined values have been reached.
(e) Counters M1-M4	(e) Counters M1-M4	(e) Counters 1-4
(f) R1, R2, C1, and Q1 time predetermined cycle and furnish to CR12 a signal that indicates end of cycle.	(f) Timing means includes R1, R2, C1, RT1, and relay K5.	(f) R4, R3, C1, C5, & Q1 time a predetermined cycle; Q1 furnishes signal that indicates end of cycle.

<u>Maxon (App. I)</u>	<u>Giannini (App. II)</u>	<u>UMC-A (App. III)</u>
(g) Reset probe and CR1 apply voltage to timing means.	(g) When reset level is reached, brush leaves reset level contact, beginning timing cycle.	(g) Opening of contact (not shown)
(h) Information release gate CR12 responds to end of timing cycle signal, and diode gates CR15-18 pass signal from probes and CR4, 6, 8, and 10 to counters.	(h) Relay K5 and associated contacts. Contact pairs 11 & 14, 15 & 18, 2 & 6, pass information from storing means K1-4 to counters.	(h) Bistable flip-flop and relay 5R (contact 5R1 & coil 5R) respond to end of cycle; contacts 1R2-4R2 pass signal from relays 1R-4R to counters.
2(i) Low natural frequency spring-mass system	2(i) Low natural frequency spring-mass system	2(i) Low natural frequency spring-mass system with appropriate damping
3(e)(i) Counters M1-4 advanced by probes and rectifiers	3(e)(i) Counters M1-4	3(e)(i) Counters 1-4 advanced by probes and relays 1R-4R
(h)(i) Diode gates CR15-18	(h)(i) The contact pairs listed in 1(h)	(h)(i) Contacts 1R2-4R2

Maxon (App. I)	Giannini (App. II)	UMC-A (App. III)
4(j) When mass reaches reset level, reset probe makes contact. When signal falls below reset level, probe is disconnected. This removes power from storing means CR4, 6, 8, 10.	4 (j) Brush leaves reset level contact when signal exceeds reference value. When signal falls below reset value, brush engages reset level contact, disabling sensing and storing means.	4 (j) Reset probe senses signal exceeding reference value. When reset probe switch closes, timer capacitors C5 and C1 discharge through reset probe; 1R reset coil is energized to open contact 1R1 and removes power from latching contacts 2R1-4R1, disabling the storing means.

Element 1(c) of the Weaver patent claims "means providing a signal proportional to . . . accelerations." In each of the prior art references the corresponding element, a moving mass, closes circuits and provides a *mechanical* signal proportional to acceleration. The specifications of the Weaver patent, however, disclose a device that generates an *electrical* signal. If the patent is construed to claim means providing an electrical signal, the patent will not read on the prior art. Tr. 596-97.

It is an axiom of patent construction that claims must be read in light of the specifications. See, e.g., *Caterpillar Tractor Co. v. Berco, S.p.A.*, 714 F.2d 1110, 1116 (Fed.Cir.1983) (citing *United States v. Adams*, 383 U.S. 39, 49, 86 S.Ct. 708, 713, 15 L.Ed.2d 572 (1966)). When all the claims of a patent read literally on

a prior art reference, this Court must avoid anticipation, if possible, and secure to the patentee the just fruits of his actual invention by construing those claims to cover what the drawings and specifications disclose. See, e.g., *Dominion Magnesium Ltd. v. United States*, 162 Ct.Cl. 240, 248-49, 320 F.2d 388, 394 (1963).² See also *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577 (Fed.Cir. 1984) (Court should construe claims so as to sustain their validity, if possible).

The Court concludes that the Weaver patent claims means that generate an electrical signal. Therefore, the prior art does not anticipate the Weaver patent.

B. Obviousness

Even if no single prior art reference anticipates an invention, the inventor may not obtain a patent if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35

2. The United States Court of Claims was usually willing to sustain a patent by reading the claims in light of the specifications. (A rare exception is *General Electric Co. v. United States*, 228 Ct.Cl. 192, 197, 654 F.2d 55, 58 (1981) (*en banc*)). Other courts refused to read into a claim restrictions that it did not contain. The Court of Claims seems to have adopted the less common approach to claim construction. See generally *SSIH Equipment S.A. v. U.S. International Trade Commission*, 718 F.2d 365, 384-86 (Fed.Cir. 1983) (dissent from *en banc* decision) (discussing "majority" and "minority" positions). The Federal Circuit has resolved the conflict by holding that the Patent Office should interpret claims without limitations found only in the specifications, because the applicant can narrow his claims during the examination; courts, however, should construe claims to sustain their validity. *In re Yamamoto*, 740 F.2d 1569, 1571-72 (Fed.Cir. 1984).

U.S.C. §103. The defendant asserts that Weaver's device would have been obvious at the time of its invention to a person of ordinary skill in the art.

When considering whether an invention would have been obvious, a court must ascertain the scope and content of the prior art, the level of ordinary skill in the art, and the differences between the prior art and the claims at issue. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 693, 15 L.Ed.2d 545 (1966). But the court must also examine secondary considerations, and may not end its inquiry before giving appropriate weight to all relevant evidence. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed.Cir. 1983).

1. *Scope and Content of the Prior Art*

A counting accelerometer is one of many kinds of motion sensing devices. The prior art includes transducers, indicators (recorders), and associated electronic circuits (*e.g.*, timers, filters, gates, latching circuits, amplifiers), as well as counting accelerometers. The parties agree that prior art comprises the following documents and devices:

*Counting Accelerometers by Maxson, Giannini,
and UMC*

See the chart and schematic diagrams.

References Cited by the Patent Examiner

The patent examiner rejected an earlier version of Weaver's claim 1 as anticipated by U.S. Patent 2,968,952 (Stalder). Stalder discloses an analog transducer that produces a signal proportional to acceleration, switches that respond when the signal reaches predetermined values, and counters that record when the switches are activated. The examiner found other elements of Weaver's invention in U.S. Patents Nos.

2,629,030 (Taylor), 2,988,737 (Schroeder), 3,295,634 (Van Dyke), 2,879,053 (Weaver '053), 3,448,621 (Magda), and 3,478,605 (Siegel). Taylor shows a timing device and a plurality of acceleration sensors each of which responds to a different level of acceleration. In Schroeder, circuits respond when the acceleration reaches given levels. Van Dyke, like the patent in suit, discloses one signal source that actuates different circuits depending upon the level of acceleration. Both Schroeder and Van Dyke use filters. Weaver '053 describes an accelerometer in which four microswitches arranged in counting circuits respond to progressively greater accelerations, and means that prevent the device from recording high frequency components. Magda is a similar acceleration sensing device, and Siegel shows an accelerometer with a physical structure similar to the patent in suit.

The Kistler Manual

In December of 1966 the Kistler Instrument Company published a manual entitled "Operation and Installation Models 305A & 305T Servo Accelerometers." The manual describes essentially the same transducer as the one shown on Figure 4 of the Weaver patent.

The Kistler Patent

U.S. Patent No. 3,323,372, issued to Walter Kistler, discloses an analog transducer "which may be connected directly . . . to recorders. . . ." *Id.* at col. 4, 7-15. The specifications suggest that a filter network could filter the output of the transducer and produce a signal proportional to acceleration.

The Anderson Patent

U.S. Patent No. 2,774,535, issued to Lloyd Anderson, discloses a recorder that contains counters, stress sensors set at predetermined levels, gates, and storage

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elements that are actuated by a continuous electrical signal proportional to stress imposed on an object.

Patents Issued to Harold D. Morris

Harold D. Morris, an employee of SDC, invented and patented what eventually became the accused device, the SDC ACA. Before August 1, 1968, when Weaver applied for a patent on his accelerometer, Morris had already been issued the following patents:

U.S. Patent No. 3,074,279 (Morris '279) discloses a position detecting transducer or accelerometer that generates a continuous current proportional to acceleration. The patent teaches that the output current can be used directly to operate a recorder.

U.S. Patent No. 3,122,714 (Morris '714) discloses a fourth-order filter system designed to eliminate all signal components above a predetermined frequency.

U.S. Patent No. 3,168,680 (Morris '680) discloses a device that actuates a switch contact when acceleration reaches a predetermined value. In the '680 device an accelerometer provides an analog signal proportional to acceleration that is filtered to eliminate frequencies above 2 cycles. The device also contains circuitry that senses an acceleration signal and stores information that the signal has reached a predetermined value. A gate can pass that signal to any equipment the user connects to the device's relay. One embodiment of the '680 patent contains a timing circuit that actuates the contacts of that relay only when the acceleration remains above a reference level for a predetermined period.

Military Specifications

The Navy procured Maxson and Giannini ACA's under military specification Mil-A-22145A (the A spec.) which required an ACA with two components: (a) a

unidirectional acceleration sensing device (a transducer) that completes electrical circuits at discrete load levels; and (b) a counting accelerometer indicator having counter displays that show the number of times an aircraft undergoes present load levels of acceleration. Around the time Weaver invented his device the Navy published a new specification, Mil-A-22145B, which was essentially the same as its predecessor but which changed two requirements: (a) the dynamic response of the accelerometer was to be flat to 2.5 Hertz (instead of the 3 Hertz noted in the A spec.); and (b) the indicator was not to count sinusoidal or square wave inputs of 4 Hertz and above (instead of cutting off counts at 5.5 Hertz, as the A spec. required).

2. Level of Ordinary Skill

As of May 1967, a person of ordinary skill in the counting accelerometer art would have had a full academic degree or equivalent experience in either mechanical or electrical engineering, plus technical training and experience in testing or designing electronic circuits, filters, transducers, and recording equipment.

3. Differences between the Weaver Patent and Prior Art

Prior art reveals—in some form—all the elements that compose the Weaver ACA; prior art also teaches certain combinations of those elements. It does not teach a combination of all.

4. Other Considerations

Even to a layman who examines the record of this case eighteen years after Weaver's invention, it might seem obvious to build the equivalent of the Weaver ACA by combining any analog transducer with, *e.g.*, the filter, modified storing means, and timing circuit of the Morris '680 and the counting means of the Maxson ACA. The Court, however, must resist the temptation to invent by

hindsight. In this case, the best antidote against the charm of hindsight is objective, contemporaneous evidence of what persons skilled in the art considered to be patentable near the time Weaver filed his application. See, e.g., *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed.Cir.1983), *cert. denied*, ____ U.S. ____, 105 S.Ct. 172, 83 L.Ed.2d 107 (1984).

The SDC Patent

Harold D. Morris, the defendant's expert witness, testified at trial that in his opinion the Weaver ACA would have been obvious at the time of its invention in light of the prior art. Morris developed the accused device, the SDC ACA, and was issued U.S. Patent No. 4,016,766 (the SDC patent). The SDC patent essentially discloses the accused device.

Morris has more than ordinary skill in the art. He earned the degree of Bachelor of Science in Electrical Engineering with honors in 1950, studied at the graduate level, is a registered professional engineer in California, and since 1960 has been technical director of the Systron-Donner Corporation. There he oversees all the operations of the Inertial Division, which produces motion sensors—especially accelerometers and related signal processing circuitry.

His SDC patent discloses an ACA that uses an analog transducer, filter, and timing circuit to generate an electrical signal proportional to maneuvering accelerations. Counters indicate how many times acceleration has reached any of four load levels. With few differences, claim 15 of the SDC patent quotes elements 1(a)-(e) of Weaver's claim 1.

At the time Morris invented the SDC ACA, he knew of his own analog transducer (Morris '279), his filter

system ('714), and his switch patent ('680), which discloses storing, gating, and timing means and suggests adding other equipment to an output relay. He also knew of military specification MIL-A-22145, to which the Maxson and Giannini ACA's had been built. Morris has testified that this specification would have spurred a person of ordinary skill to design circuitry 1) that stores information of an acceleration signal having reached any of four load levels; and 2) that prevents the corresponding counters from advancing until that signal has sunk below a reset level.

Nevertheless, in 1968 SDC offered its ACA to the Navy as a "unique Dynamic Discriminator circuit, which permits counting of true maneuvering loads only." And on July 14, 1969, Morris applied for a patent on the device because he felt that he "had achieved a rather remarkable new design of counting accelerometer and that it deserved to be protected by a United States patent." Tr. 729.

Of course, the Weaver and SDC devices are not identical. The Court took the differences into account when weighing Morris's admission. Still, the SDC and Weaver ACA's are similar, and an expert who knew all the cited prior art or its equivalent believed in 1968 that one of the devices was patentable. This is evidence that the Court cannot ignore

The Aerodyne Bid

Three companies survived the first round of the Navy's 1967-68 procurement of ACA's under specification B. One of those companies, Aerodyne Controls Corporation, offered an ACA with an *electromechanical* transducer. Yet Morris testified in 1983 that the size limits and strict requirements for transducer response found in specification B could have suggested only one thing to a person of ordinary skill in 1967; an *analog*

transducer with an electrical filter. Tr. 514-16. Aerodyne's bid tends to show that specification B did not suggest the use of analog transducers in 1967-68.³

Conclusion

What SDC, Morris, and Aerodyne did and said in 1968-69 suggests that hindsight influenced Morris's testimony in 1983. The defendant has not persuaded the Court that Weaver's invention would have been obvious to a person of ordinary skill at the time it was made.

C. Prior Use or Sale

An inventor is not entitled to a patent if the device was "in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States." 35 U.S.C. § 102(b). Weaver filed his application on August 1, 1968. Over a year earlier, on July 27, 1967, UMC had offered to sell the Navy an ACA that used an analog transducer. The defendant argues

3. The plaintiff offered no evidence that Aerodyne's device was designed by a person of ordinary skill. The defendant suggests that the designer may have been an inexperienced high school graduate, and argues that Aerodyne's bid is therefore irrelevant.

The finder of fact, however, may reason from any inference that reasonable minds can draw from the evidence, even if the inference relies in part on conjecture. *E.g.*, *Daniels v. Twin Oaks Nursing Home*, 692 F. 2d 1321, 1326 (11th Cir. 1982), *reh'g denied*, 698 F.2d 1238 (1983). The finder of fact may even draw inferences from inferences provided that each is reasonable. *Id.* at 1324.

Here the record shows that the Navy sent the 1968 IFB to 33 companies and received thirteen technical proposals, which Navy technical personnel reviewed. They rejected ten as unacceptable; they admitted Aerodyne to the second stage of the competition.

The Court infers that Aerodyne submitted a bid hoping to win the contract, and that Aerodyne acted as a prudent business organization. The Court concludes that such an organization would not endanger its chances of winning a contract by entrusting its technical proposal to a person of less than ordinary skill. Aerodyne's success in the first step of the procurement supports this conclusion.

that this offer invalidates Weaver's patent. But UMC had not yet produced the device it offered to sell.

The United States Court of Customs and Patent Appeals adopted three prerequisites for § 102(b) attacks against patents on devices offered for sale before they have been produced:

(1) The complete invention claimed must have been embodied in or obvious in view of the thing offered for sale. . . . Complete readability of the claim on the thing offered is not required because whatever is published (or on sale) more than one year prior to the filing of a patent application becomes part of the prior art over which the claim must be patentable. . . .

(2) The invention must have been tested sufficiently to verify that it is operable and commercially marketable. This is simply another way of expressing the principle that an invention cannot be offered for sale until it is completed, which requires not merely its conception but its reduction to practice. . . .

(3) Finally, the sale must be primarily for profit rather than for experimental purposes. . . .

In re Corcoran, 640 F.2d 1331, 1333-34 (C.C.P.A.1981) (quoting *Timely Products Corp. v. Arron*, 523 F.2d 288, 302 (2d Cir. 1975)) (citations omitted). With one qualification, *Corcoran* and *Timely Products* set out the law that binds this Court. See *Barmag Barmer Maschinenfabrik AG v. Murata Machinery, Ltd.*, 731 F.2d 831, 836-37 (Fed.Cir.1984) (citing *South Corp. v. United States*, 690 F.2d 1368, 1370 (Fed.Cir.1982)).

UMC has admitted that it offered its device to the Navy for profit, not for experimentation; but it denies that it reduced Weaver's device to practice or built a physical embodiment before August 1, 1967.

Reduction to Practice

— “[R]eduction to practice requires that an invention be ‘sufficiently tested to demonstrate that it will work for its intended purpose.’ . . . On the other hand, ‘[t]here is no requirement for a reduction to practice that the invention, when tested, be in a commercially satisfactory stage of development.’ ” *Barmag Barmer*, 731 F.2d at 838 (citations omitted).

Weaver built a testing device comprising a centrifuge (to provide a constant acceleration load) and a shaker (to superimpose vibrations upon the static acceleration of the centrifuge). At some time between May and June of 1967 (Weaver could not recall the exact date), he attached an engineering prototype of his ACA to the testing device and determined that he could eliminate superimposed vibrations from the acceleration signal. The prototype contained at least a Kistler analog transducer. The Court finds that these tests reduced Weaver’s invention to practice, because they demonstrated that his invention would serve its intended purpose. Weaver admitted this at trial:

Q. All right, up to May or June 1967 such—

A. Some type of prototype was built that demonstrated that the thing was feasible. That is all I can say, sir.

THE COURT: You were satisfied from that which was built in May of ’67 Mr. Weaver? I just want to make sure I understand your testimony. You were satisfied as a result of the bread-board prototype that was built that the invention, which you conceived, would work?

THE WITNESS: That is right, Your Honor.—more of the invention we worked up, we could satisfy the Navy’s requirements.

THE COURT: I understand.

Tr. 102-03.

Physical Embodiment

One purpose of the "on sale" bar of § 102(b) is to preclude exploitation of the patent monopoly substantially beyond the statutory period. *E.g.*, *General Electric*, 228 Ct.Cl. at 202, 654 F.2d at 61. To prevent patentees from circumventing this policy, a panel of the Federal Circuit has refused to condition the § 102(b) bar upon the existence of a physical embodiment of the thing offered for sale in every case, because situations might arise in which "commercial benefits outside the allowed time have been great" even without a physical embodiment. *Barmag Barmer*, 731 F.2d at 837. UMC, however, never produced its ACA; it reaped no commercial benefits before the statutory period. In this case, therefore, the defendant must show either that the claims in the Weaver patent were embodied in the thing offered for sale, or that Weaver's patented device was obvious in view of the thing offered for sale.

The parties dispute what the UMC prototype contained. Before the offer of sale, July 27, 1967, the only persons who tested the ACA were Weaver and his assistant, Paul Doane. Doane himself tested a prototype that contained only a transducer, a filter, and a voltage sensor that measured one load level. The prototype had no timing circuitry. The claims of the Weaver patent do not read on this device. But Doane joined UMC in June of 1967 and did not know what Weaver might have tested in May.

In answers to interrogatories, UMC described the May 1967 prototype as containing: means providing an analog signal proportional to acceleration loading, a plurality of sensing and storing means, a plurality of

recording means, a timing means, means to activate the timer when the acceleration signal reaches a reference level, and means responsive to the end of a timing signal that could pass information from the storing means to the recording means. This device would embody all the elements of Weaver's claim 1.

At his deposition Weaver testified that he did not know what the May prototype contained. At trial he testified that the prototype must have contained what UMC's answers listed. Other evidence, however, tends to show that those answers were wrong.

The answers describe the indicator as "encapsulated." Both Weaver and Doane testified that UMC's supplier did not deliver encapsulated circuitry until the fall of 1967, probably after October 20th; and the defendant has admitted that UMC itself lacked the equipment needed to build such circuitry. It follows that in May of 1967 UMC could not have built the device described in its answers.

On this point, the Court mistrusts the ambiguous oral testimony and information submitted for the purpose of litigation. The Court prefers to rely on contemporaneous documents. In its 1967 request, the Navy required bidders to describe their transducers. UMC's July offer sets out the circuitry to be used with the transducer and adds, "Such a transducer has been constructed and tested in conjunction with voltage sensing and time controlled circuitry."

When the Navy received this offer, it requested a technical proposal, which UMC submitted on August 2, 1967. UMC hoped to win the ACA contract. The Court infers that UMC would have included in that proposal all its favorable information about Weaver's invention. But the test results in the proposal show only that Weaver

EDITOR'S NOTE

THE FOLLOWING PAGES WERE POOR HARD COPY
AT THE TIME OF FILMING. IF AND WHEN A
BETTER COPY CAN BE OBTAINED, A NEW FICHE
WILL BE ISSUED.



had attached the filtered Kistler transducer and a Statham accelerometer to the centrifuge. The filtered transducer rejected the superimposed vibrations; the Statham accelerometer did not. These data show the raw output of the filter, a smooth signal rising in proportion to acceleration. No discrete voltage levels were detected.

The Court concludes that the device Weaver tested in May was similar to the one Doane tested in June, except that it contained a timing circuit of some kind. It lacked a plurality of voltage sensors, a plurality of storing and recording means, and means to pass information from the storing to the recording means. The prototype did not embody Weaver's claim 1. The Court has already held that Weaver's device was not obvious in view of the Morris '680, which contains a transducer, filter, voltage sensing circuitry, and timing means. Therefore, Weaver's ACA was not obvious in view of its prototype, which comprised the same elements as the Morris '680.

D. Failure to Disclose Best Mode

Patent specifications must describe the invention so clearly "as to enable any person skilled in the art . . . to make and use the same, and shall set forth the best mode contemplated by the inventor for carrying out his invention." 35 U.S.C. §112. The defendant has shown that when Weaver filed his application he knew of a better filter circuit than the one disclosed.

In Morris's opinion, capacitor 38 and resistor 39 (shown in patent Figure 4) would not perform as the patent requires; that is, they would fail to compensate for the slightly underdamped characteristics of the LCR filter preceding the operational amplifier 33. He also predicted that the filter would cause the operational amplifier to oscillate and burn out prematurely. His

oscillation could even trigger the voltage sensors at wrong points, making the device inoperable.

The plaintiff's expert, Robert Rea, tested a filter circuit built of modern components adjusted to approximate the system Weaver disclosed. In Rea's opinion the Weaver device would be stable within the loading range foreseen by the patent.

The Court sees no reason to umpire this battle of the experts. Morris has conceded that in 1967 a person of ordinary skill knew means for filtering acceleration signals, and knew them very well. "A patent is invalid only when those skilled in the art are required to engage in *undue* experimentation to practice the invention." *W. L. Gore*, 721 F.2d at 1557 (emphasis in the original) (citation omitted). Even if Weaver's filter malfunctions, a person skilled in the art could easily substitute another.

And even though Weaver himself knew of a better filter, in a §112 defense this Court may consider "only evidence of concealment (accidental or intentional). . . . That evidence, in order to result in affirmance of a best mode rejection, must tend to show that the *quality* of an applicant's best mode disclosure is so poor as to effectively result in concealment." *In re Sherwood*, 613 F.2d 809, 816 (C.C.P.A.1980) (emphasis in the original), *cert. denied sub nom. Diamond v. Sherwood*, 450 U.S. 994, 101 S.Ct. 1694, 68 L.Ed.2d 193 (1981). Weaver did not conceal his invention.

E. Failure to Invent

A person is not entitled to a patent if "he did not himself invent the subject matter sought to be patented." 35 U.S.C. §102(f). The defendant contends that Weaver procured each element of his invention from

others and designed none of them himself; Weaver therefore is not the inventor.

This argument has no merit. Weaver's invention combines known elements. A combination is not unpatentable merely because each component is old. *E.g.*, *In re Stewart*, 222 F.2d 747, 752, 42 C.C.P.A. 937 (1955).

F. Conclusion

A patent is presumed valid, and the party asserting invalidity bears the burden of persuasion. 35 U.S.C. §282. No matter what the basis for attack, the challenger must overcome the presumption with clear and convincing evidence. *E.g.*, *Pennwalt Corp. v. Akzona, Inc.*, 740 F.2d 1573, 1578-79 (Fed.Cir.1984).

The defendant has failed to persuade this Court that Weaver's patent is invalid.

INFRINGEMENT

To determine if a patent has been infringed requires two steps. The court must first study all relevant patent documents to ascertain what the claims in issue mean. It must then read those claims on the accused structure. To learn that the claims read literally on the accused structure is to learn little. The structure infringes the patent only if it does the same work in substantially the same way to accomplish substantially the same result. *Autogiro Co. of America v. United States*, 181 Ct.Cl. 55, 68, 384 F.2d 391, 401 (1967), *reh'g denied*, 184 Ct.Cl. 801 (1968).

A. Scope of the Claims

Weaver's claim 1, upon which the other claims depend, originally read as follows:

1. An accelerometer for counting the number of times each of a plurality of acceleration maneuvering loadings of predetermined magnitude of an

aircraft occur, comprising means adapted to be mounted to an aircraft for sensing acceleration loading thereof, means providing a signal proportional to said accelerations, a plurality of sensing means each responsive to the signal reaching a predetermined value, and means responsive to each of said sensing means for recording the number of times each of said sensing means senses a predetermined value of the signal.

On April 15, 1970 the patent examiner rejected claim 1 as anticipated by U.S. Patent No. 2,968,952 (Stalder). The examiner then rejected all the claims as obvious in light of prior art. But he added, "Claims setting forth the specific means used for the circuit or counter actuation would be given favorable consideration."

Weaver did not traverse the examiner's objections. Instead, Weaver amended his claim 1 and added the following language:

a plurality of acceleration level recording means, timing means for timing a predetermined cycle and furnishing a signal indicative of the end of said timing cycle, means responsive to an acceleration signal reaching a reference level for causing said timing means to initiate a timing cycle, and means arranged to pass a signal from each of said sensing and storing means to one of said recording means by the signal produced by said timing means at the end of a timing cycle.

Weaver's attorney argued that the additions made the invention patentable:

Claim 1 as now presented clearly patentably distinguishes over the cited references. None of the cited or applied references discloses a system in which

time discrimination is made between various loading (sic) and aircraft maneuvering acceleration loading. This feature of applicant's invention is now particularly pointed out in claim 1 by the recitation of the recording means being effective to receive an acceleration loading signal only if a loading exists through a predetermined time cycle. Claim 1 further brings out that a signal is generated at the end of a timing cycle which enables the passage of the acceleration loading indication from each of the sensing and storing means to warn (sic) of a recording means.

Weaver amended claim 1 once again "to provide more concise terminology in the last three lines thereof, without changing the substance thereof." The Patent Office approved claim 1 as amended. The last lines now read: "means responsive to said end of cycle signal arranged to pass a signal from each of said sensing and storing means to an associated one of said recording means."

The Court must interpret Weaver's claims in light of their file wrapper or prosecution history in the Patent Office. See, e.g., *Farrell Marine Devices, Inc. v. United States*, 179 Ct.Cl. 790, 804, 377 F.2d 560, 568-69 (1967) (citing *Graham v. John Deere Co.*, 383 U.S. at 33, 86 S.Ct. at 701). The file wrapper shows that Weaver obtained claim 1 of his patent because he incorporated a "time discrimination feature" into a claim that the examiner otherwise would have rejected as anticipated and obvious. The Court cannot now disregard qualifications upon which Weaver relied to secure allowance of his claim. See *id.*, 179 Ct.Cl. at 805, 377 F.2d at 571.

The time discrimination feature of the Weaver patent comprises means that start the timer when

acceleration reaches the reset level, and means responsive to the end of cycle signal that pass information from strong means to recording means. The claim specifies results; it does not describe the structures that produce those results. The Court therefore must construe the means "to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. §112.

In this case the Court has two reasons to narrow the range of those equivalents to what the specifications disclose. First, UMC neither produced its ACA nor licensed others to produce it; UMC holds a mere "paper patent." See, e.g., *International Glass Co. v. United States*, 187 Ct.Cl. 376, 382, 408 F.2d 395, 398 (1969). Second, the record places Weaver's ACA in a crowded field. His timing system is similar to those in the Maxson, Giannini, and UMC-A devices. Compare claim elements 1(g & h) on page 8 with the same elements on page 10.

The Court must therefore limit the scope of claim 1 to an accelerometer having the timing means revealed in the specifications. See *Farrell Marine Devices*, 179 Ct.Cl. at 806-07, 377 F.2d at 572.

B. Reading Weaver's Claims on the Accused Device

Operation of the SDC ACA

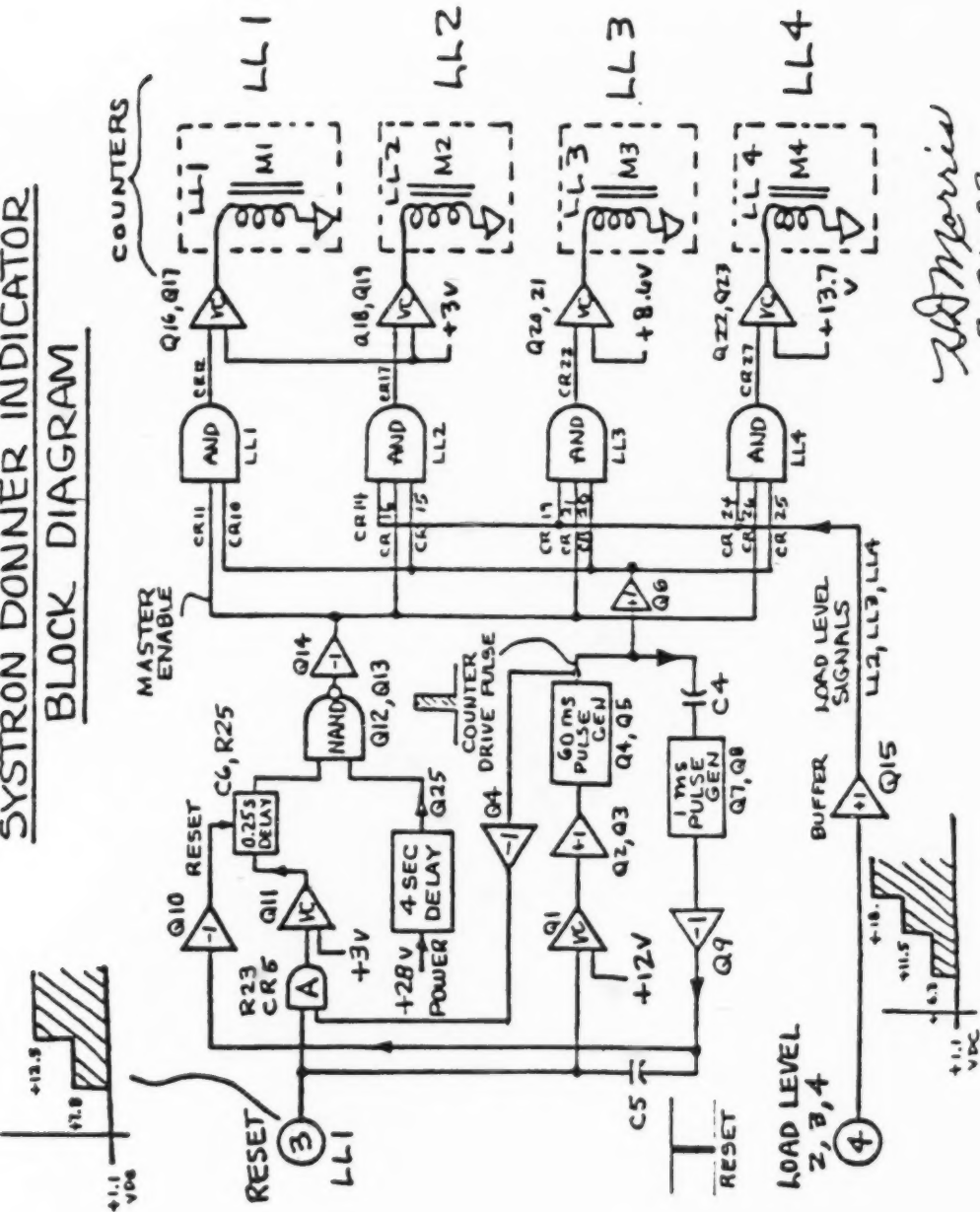
In the accused SDC ACA, a filtered analog transducer generates an electrical signal proportional to acceleration. The current from the filter drives two voltage comparators, one of which determines only if the signal has reached the reset level. Once the signal reaches the reset level, the comparator and associated components raise to +7.8 VDC the voltage on pin 3 (shown on the upper left of the block diagram of the Systron-Donner Indicator). The other comparator works with a binary

counter and other components to encode into discrete voltages information that the acceleration signal has reached present load levels. For example, when the signal exceeds load level 1 (LL1), the system sends a high level output voltage of +12.5 VDC to pin 3. When the acceleration exceeds LL2, the voltage on pin 4 rises to +6.3 VDC. The other load levels have associated voltages of +11.5 (LL3) and +18 (LL4).

When the acceleration signal exceeds the reset level, components CR5, Q11, and R23 initiate a timing cycle that is measured by timing means Q12, Q13, and R25-C6. At the end of the timing cycle, Q12 turns off Q13 and Q14. Transistor Q14 then passes a "Master Enable" signal to the four "AND" gates that drive the counters. But the end of the timing cycle alone does not drive the counters.

When the acceleration signal exceeds a load level, the information is stored in the "AND" gates. If the acceleration signal then falls below the reset level after the end of a timing cycle, pulse generator Q4-Q5 produces a 60 millisecond electrical pulse, which travels to the "AND" gates through buffer Q6. By now, the gates have received information that load levels have been exceeded, the timing cycle is complete, and the acceleration level has fallen below reset. Under these conditions, the "AND" gates send signals through voltage comparators that discriminate among the various load level signals. These signals drive the appropriate counters and record the accelerations experienced by the aircraft. The end of the 60 millisecond pulse triggers the 1 millisecond pulse generator Q7-Q8, which resets the device.

SYSTRON DONNER INDICATOR BLOCK DIAGRAM



AD Morris
7-21-83

No Literal Infringement

If broadly interpreted, Weaver's claims literally read upon the SDC ACA, which contains means to generate a signal proportional to acceleration, a plurality of sensing, storing, and recording means, means that start a timer when the signal reaches a reference level, timing means that produce a signal at the end of a cycle, a filter, gates associated with counters, and a disabling means.

The defendant argues that nothing in the device corresponds to Weaver's claim 1(h), "means responsive to said end of cycle signal arranged to pass a signal from each of said sensing and storing means to an associated one of said recording means." In the accused device, the means responsive to the end of cycle signal passes only a "Master Enable" signal to the gates and does not transfer information from the gates to the counters. Morris has admitted, however, that the counters will not advance — in fact, the device will not operate — without the "Master Enable" signal. That signal is therefore "arranged," along with other components, to transfer information to the counters.

But a device literally infringes a patent only if the device reflects the claims as properly construed. See, e.g., *Atlas Powder Co. v. E.I. DuPont De Nemours & Co.*, 750 F.2d 1569, 1579 (Fed.Cir. 1984). The Court has already refused to ascribe to the plaintiff's claim a meaning as broad as the literal purport of its language. If limited by the specifications, the claims of the Weaver patent do not read on the SDC ACA.

No Actual Infringement

Even if Weaver's claim 1 could bear its literal meaning, the SDC device would not infringe Weaver's patent, because the two ACA's do not perform the same

work in the same way to accomplish substantially the same result. See *Autogiro*, 181 Ct.Cl. at 66, 384 F.2d at 399-400.

As soon as the timing cycle of the Weaver device ends, release gate 54 sends information from the latches to the counters, which half index. The counters register a full count later, when the acceleration signal sinks below the reset level. In the SDC device, however, the 60 millisecond pulse transfers information to the counters after the end of a timing cycle, but not until the acceleration signal has sunk below the reset level. This difference in function leads to different results.

Both ACA's use electromechanical counters, which react to electrical stimulation only after a delay. That delay varies with temperature. A drive pulse lasting 40 milliseconds would drive the counters at any likely temperature. The SDC device's 60 millisecond pulse guarantees that the counters will never fail to count. But in the Weaver ACA, the drive pulse from release gate 54 begins at the end of a timing cycle and stops when acceleration sinks below reset. If the timing cycle should end and the acceleration signal should sink below reset at the same moment, the counters would not advance. And if, for example, the signal should sink below reset only 5 milliseconds after the end of the timing cycle, the counters probably would not advance. Pulses of other short durations might activate one counter but fail to activate another.

On the other hand, after the end of a timing cycle the Weaver device continues to produce a counter drive pulse until acceleration sinks below reset, no matter how long the period. For example, if the aircraft should bank in a circle and exceed an acceleration level for 20-30 seconds, the pulse would continually energize the counters, subjecting the ACA to heat and stress.

The Court concludes that the two ACA's transfer and record information in substantially different ways and can produce substantially different counts.⁴

The SDC ACA File Wrapper

During the prosecution of his ACA patent, Morris tried several times to provoke an interference with the Weaver patent by copying Weaver's claim 1. To one of his amendments Morris added a Declaration under Rule 131, swearing that he conceived his own invention before Weaver's filing date. To another amendment he added the following argument:

The counter actuation in Weaver may occur at an earlier point in time than in MORRIS, but the accumulated counts are the same in number. Whether the latching voltage comparator signal is joined by the necessary signal to produce a count earlier or later is of no consequence once the predetermined digital delay period has elapsed. Thus the limitation in Claim 1 of Weaver stating that a signal arises "indicative of" the end of the timing cycle is not a material limitation. As shown in MORRIS it may appear at or subsequent to the end of the timing cycle and produce identical results.

According to the plaintiff, Morris has admitted that his ACA and Weaver's work in substantially the same way to accomplish substantially the same result.

4. The plaintiff argues that SDC has merely improved Weaver's device by adding features. The Court disagrees, but would find no infringement even if it accepted the plaintiff's contention. Weaver himself obtained a patent on a narrow improvement. "Accordingly, the patentee cannot prevent others from making improvements on the prior art unless they use substantially the very novelty which is the basis of his patent." *Maytag Co. v. Murray Corp. of America*, 318 F.2d 79, 84 (6th Cir.1963); accord *Thomas & Betts Corp. v. Litton Systems, Inc.*, 720 F.2d 1572, 1580 (Fed.Cir.1983).

The Court disagrees. Morris copied Weaver's claim to provoke an interference. The Court cannot interpret this standard applicant's maneuver as an admission that the two devices have similar structure, operation, and results. See *e.g.*, *Foster Cathead Co. v. Hasha*, 382 F.2d 761, 766 n. 5 (5th Cir. 1967), *cert. denied*, 390 U.S. 906, 88 S.Ct. 819, 19 L.Ed.2d 872 (1968). In fact, Morris's argument that Weaver's claim 1 reads on the SDC device failed to convince the patent examiner (the same patent examiner who reviewed Weaver's application). The examiner found Morris's copy of Weaver's claim "misleading in that it reads as if timing means 23 activates gates 21 when time runs out whereas gates [are] activated when acc. [acceleration] signal drops." Like this Court, the patent examiner found that the two devices do not perform in the same way.

CONCLUSION

The defendant has not persuaded the Court that the Weaver patent is invalid, but the plaintiff has failed to show that the patent is infringed. The Clerk will dismiss the complaint.

SCHEMATIC: MAXSON COUNTING ACCELEROMETER INDICATOR

4 COUNTERS

APPENDIX I

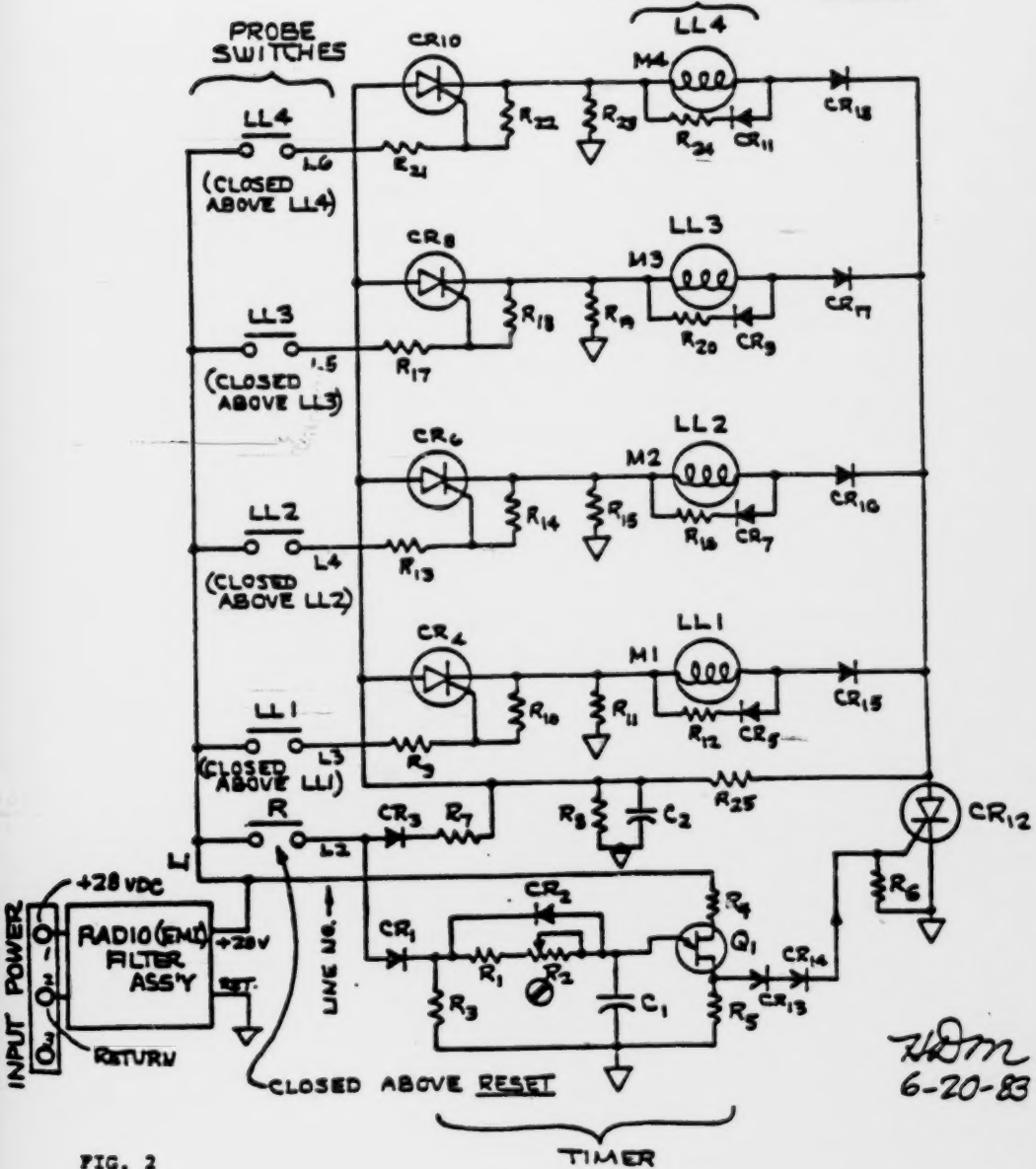
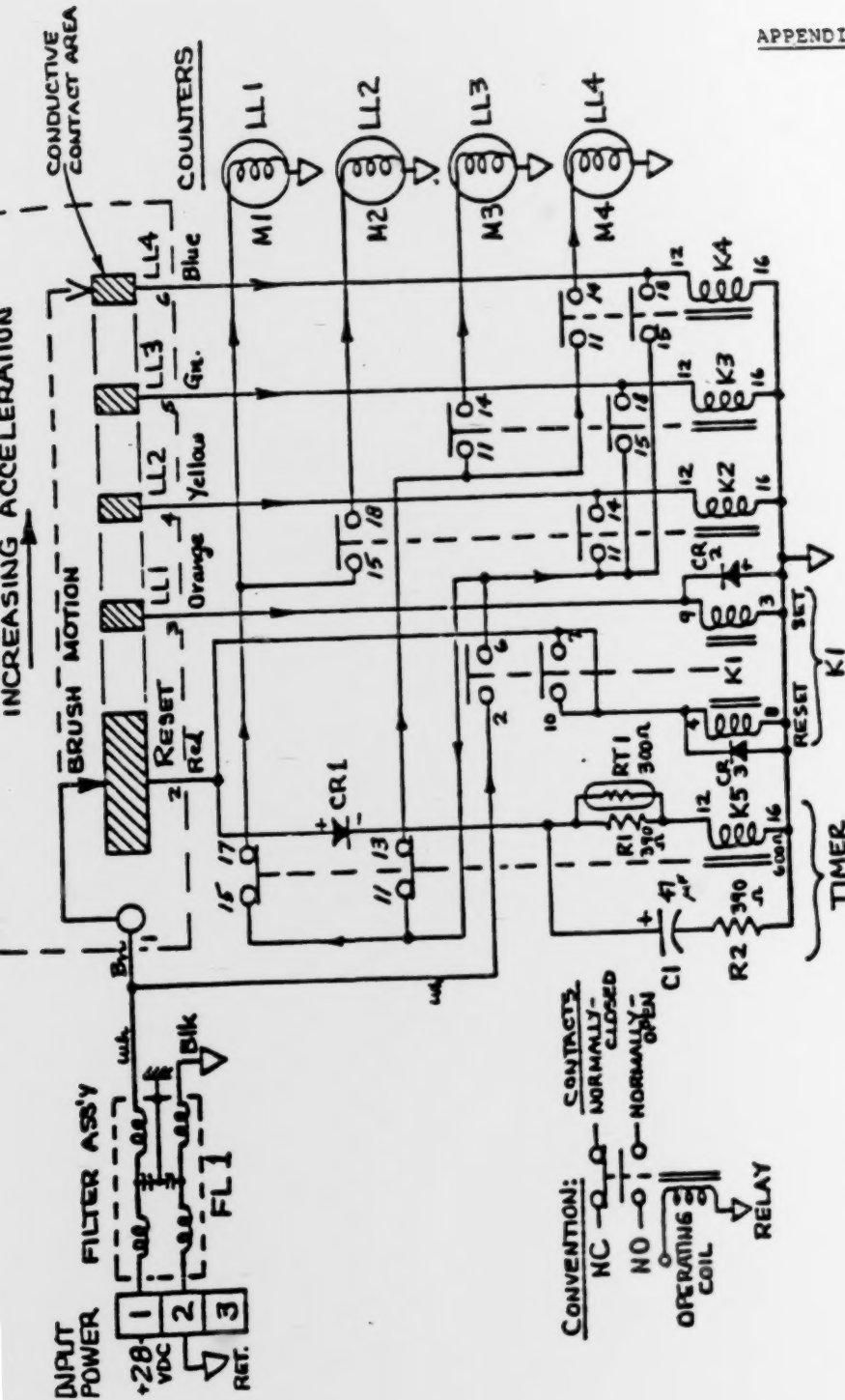


FIG. 2

WDM
6-20-83

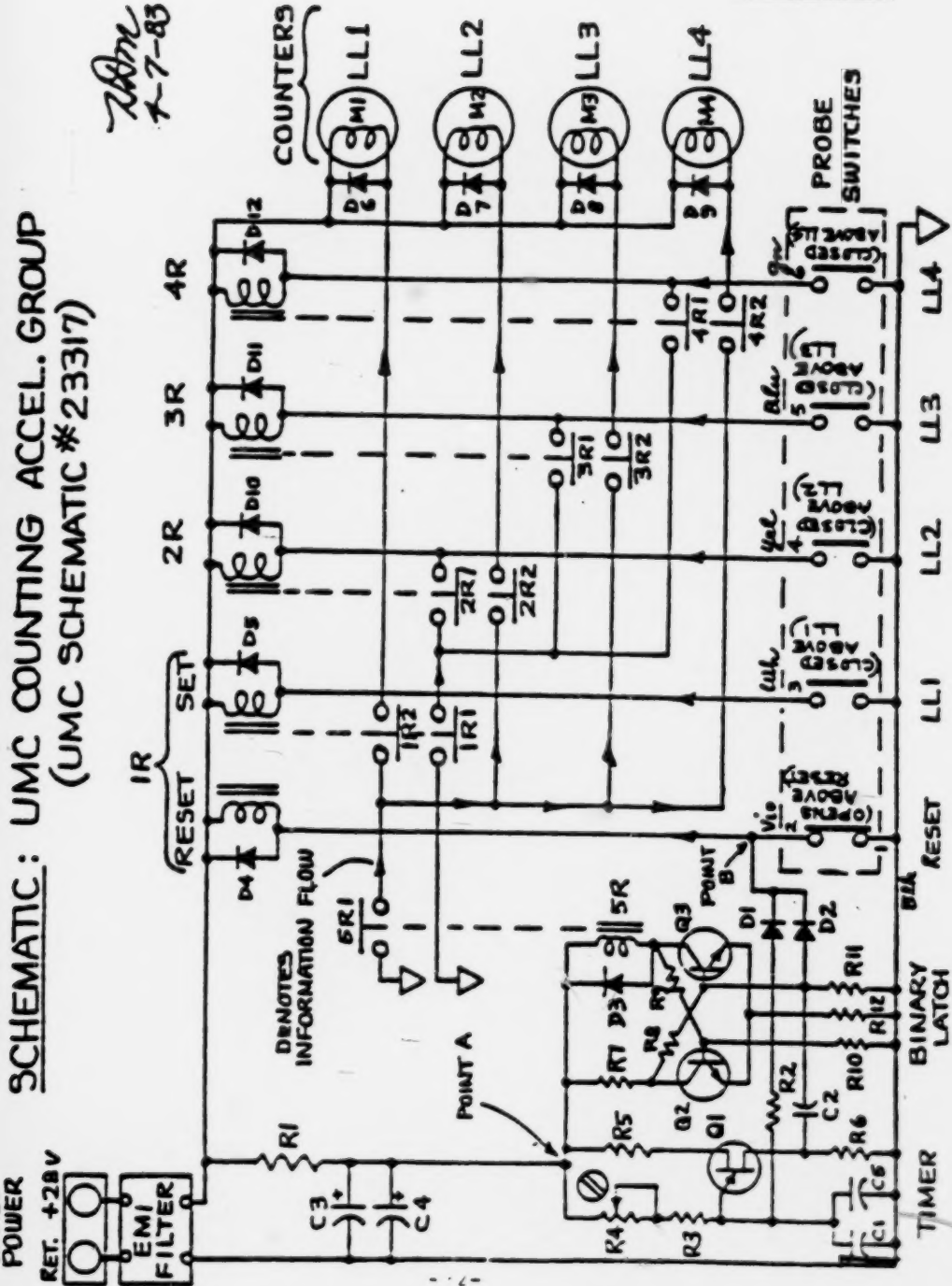


SCHEMATIC: GIANNINI CONTROLS
COUNTING ACCELEROMETER
INDICATOR

WDM
6/20/23.

SCHEMATIC: UMC COUNTING ACCEL. GROUP (UMC SCHEMATIC #23317)

28me
4-7-83



**JUDGMENT ENTERED BY UNITED STATES
CLAIMS COURT**

In the United States Claims Court

No. 335-80 C

UMC ELECTRONICS COMPANY)	
	)	Judgment
v.	)	Filed
	)	Aug. 5, 1985
THE UNITED STATES)	

Pursuant to the opinion of August 2, 1985, it was held that plaintiff is not entitled to recover with the complaint to be dismissed.

IT IS ORDERED AND ADJUDGED this date, pursuant to Rule 58, that the complaint is dismissed.

Frank T. Peartree
Clerk of Court

August 5, 1985 By: LINDA A. EDDINS
Deputy Clerk

NOTE: As to appeal, 60 days from this date, see FRAP 4(a)

JUDGMENT ENTERED BY COURT OF APPEALS

United States Court of Appeals
for the Federal Circuit

UMC ELECTRONICS COMPANY,)	
<i>Appellant,</i>)	
	)	Appeal Nos.
<i>v.</i>	)	86-522
	)	and 86-559
THE UNITED STATES,)	
<i>Cross-Appellant.</i>)	

JUDGMENT

ON APPEAL from the United States Claims Court
in CASE NO(S). 335-80C.

This CAUSE having been heard and considered, it
is ORDERED and ADJUDGED:

Affirmed on Different Grounds.

Vacated-In-Part.

ENTERED BY ORDER
OF THE COURT

/s/ FRANCIS X. GINDHART

Francis X. Gindhart, Clerk

Dated April 15, 1987

ISSUED AS MANDATE: July 6, 1987

COSTS AGAINST THE APPELLANT:

Printing	\$359.20
TOTAL.....	\$359.20

**COURT OF APPEALS ORDER DENYING
PETITION FOR REHEARING**

Note: This Order will not be published in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest. It is a public record. It is not citable as precedent.

**United States Court of Appeals
for the Federal Circuit**

UMC ELECTRONICS COMPANY,)	
Appellant,)	
	)	Appeal Nos.
v.	)	86-522
	)	and 86-559
THE UNITED STATES,)	
Cross-Appellant.)	

Before SMITH, NIES, and ARCHER, *Circuit Judges*.

ORDER

A petition for rehearing having been filed in this case,

UPON CONSIDERATION THEREOF, it is
ORDERED that the petition for rehearing be, and
the same hereby is, denied.

Judge Smith would grant the petition with oral
argument.

The suggestion for rehearing in banc is under
consideration.

FOR THE COURT

/s/ FRANCIS X. GINDHART

Francis X. Gindhart, Clerk

Date: June 29, 1987

cc: Mr. Robert H. Montgomery
Mr. Vito J. DiPietro, DOJ

**COURT OF APPEALS ORDER DENYING
SUGGESTION FOR REHEARING IN BANC**

Note: This Order will not be published in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest. It is a public record. It is not citable as precedent.

**United States Court of Appeals
for the Federal Circuit**

UMC ELECTRONICS COMPANY,)	
Appellant,)	
	)	Appeal Nos.
v.	)	86-522
	)	and 86-559
THE UNITED STATES,)	
Cross-Appellant.)	

ORDER

A suggestion for rehearing in banc having been filed in this case,

UPON CONSIDERATION THEREOF, it is
ORDERED that the suggestion for rehearing in banc is declined.

Judges Smith and Newman would grant the suggestion for rehearing in banc.

FOR THE COURT

/s/ FRANCIS X. GINDHART

Francis X. Gindhart, Clerk

Date: July 14, 1987

cc: Mr. Robert H. Montgomery
Mr. Vito J. DiPietro, DOJ

**COURT OF APPEALS DECISION IN
STATE INDUSTRIES, INC. v.
MOR-FLO INDUSTRIES, INC.**

Note: This opinion will not be published in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest. It is a public record. It is not citable as precedent. The decision will appear in tables published periodically.

**United States Court of Appeals
for the Federal Circuit**

STATE INDUSTRIES, INC.,)	
)	
Appellee,)	
)	
v.)	
	)	Appeal No.
	)	86-1452
MOR-FLO INDUSTRIES, INC.,)	
and AMERICAN APPLIANCE)	
MFG. CORP.,)	
)	
Appellants.)	

DECIDED: March 3, 1987

Before MARKEY, *Chief Judge*, DAVIS and SMITH,
Circuit Judges.

SMITH, *Circuit Judge*.

DECISION

Mor-Flo Industries, Inc., and American Appliance Mfg. Corp. appeal from the May 29, 1986, judgment of the United States District Court for the Eastern District of Tennessee holding patent No. 4,447,377 valid and infringed. We *affirm*.

OPINION

State Industries, Inc. (State), is the owner of a patent, No. 4,447,377 ('377 patent), for a method of insulating a water heater. The method involves the use of a plastic envelope to contain the liquid foam while it rises, and to prevent the foam from invading areas, such as the electrical components and the combustion chamber, that must be kept free of foam.

Mor-Flo Industries, Inc., and American Appliance Mfg. Corp. (Mor-Flo) contend here, as they did below, that the '377 patent is invalid either because a product made by the process was offered for sale more than 1 year before the application was filed, or because the method would have been obvious to one of ordinary skill in the art. Mor-Flo also argues that, even if the '377 patent is valid, its process does not infringe State's patent.

The district court rejected Mor-Flo's on-sale defense because it found that Mor-Flo had failed to carry its burden of proof on the issues whether the product offered for sale was produced by the patented process, and whether the method was reduced to practice before the critical date. The district court also held that the invention would not have been obvious to one of ordinary skill in the art and concluded that the patent was valid. It held that Mor-Flo's sleeve fell within the meaning of the term "envelope" as used in the patent, and found that Mor-Flo's process infringed State's patent directly or under the doctrine of equivalents.

Claim Interpretation

Mor-Flo argues that the district court erred in interpreting the claim at issue. Mor-Flo contends that its sleeve is not an envelope within the meaning of the

claim because an envelope must have two walls and its sleeve has only one. The district court rejected this position based on the testimony of State's expert, the language of the specification of the patent, and the rules of claim interpretation. The court disregarded the testimony of Mor-Flo's expert because he disagreed with the proposition that the limitations of narrow claims cannot be read into broader ones. The court found that this misstatement or misunderstanding of the law seriously undermined his credibility.

Claim interpretation is a question of law. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984). Thus, the district court's interpretation of the claim is not subject to the clearly erroneous standard of review. *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 220 USPQ 592 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835 (1984).

There was no error in the district court's interpretation of the claim. The court considered the claim in light of the specification and correctly noted that the limitations of narrower claims cannot be read into broader ones. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), *cert. denied*, 465 U.S. 1026 (1984), *overruled on other grounds by SRI International v. Matsushita Electric Corp. of America*, 775 F.2d 1107, 227 USPQ 577 (Fed. Cir. 1985); *Yarway Corp. v. Eur-Control USA, Inc.*, 775 F.2d 268, 227 USPQ 352 (Fed. Cir. 1985). Claims 2 and 3 limit the envelope to a double-walled structure, but claim 1 contains no such limitation.

Mor-Flo claims the district court also erred by interpreting the claim one way for validity purposes and a different way for infringement purposes. This contention is based on Mor-Flo's argument that its sleeve is not

an envelope and, thus, has no merit in light of the determination that the district court properly interpreted the claim.

Obviousness

In *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), the Supreme Court set out guidelines to be used in determining whether a patent would have been obvious to one of ordinary skill in the art at the time the invention was made. The findings required by *Graham* concern the scope and content of the prior art, the differences between the prior art and the claims at issue, the level of ordinary skill in the art, and any objective evidence of nonobviousness presented. *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983). Mor-Flo contends that the district court did not make these required findings. There is no doubt that Mor-Flo is correct that no finding was made on the level of skill in the art. The district court made no mention of this factor. However, we find no evidence in the record directed to this question. Mor-Flo cannot complain of the failure of the court to address this issue since it did not present any evidence on a question on which it had the burden of proof. *Eaton Corp. v. Appliance Valves Corp.*, 790 F.2d 874, 229 USPQ 668 (Fed. Cir. 1986).

With regard to the other findings required by *Graham*, it is clear that the district court did make the necessary findings. Mor-Flo's argument concerning the lack of findings is limited to consideration of the section of the opinion labeled "Obviousness." Mor-Flo failed to consider the discussion of the prior art and the secondary considerations contained in the infringement section. There, the court went through a detailed analysis of the prior art relied on by Mor-Flo's expert to show obviousness. The court found that the Japanese patent relied on by Mor-Flo had limited applicability to the

patent in suit because it did not contain a description of how the structure was put together. The court also concluded that the examiner had prior art similar to both the Japanese patent and the HUD process before him during the examination. Mor-Flo has shown no clearly erroneous findings by the district court concerning the scope and content of the prior art or the differences between the prior art and the claims at issue.

In addition, the district court considered the objective evidence of nonobviousness. The court found that there was a great need to develop foam insulated heaters and that preventing leakage of the foam was a difficult problem faced by the industry in this development. The court also considered the testimony regarding Mor-Flo's purchase and disassembly of State's water heater prior to developing its own foam insulated water heater to be particularly damaging. Mor-Flo has not shown any of these findings to be clearly erroneous.

Thus, the district court's conclusion of nonobviousness is supported by the required findings, and Mor-Flo has failed to show that the district court committed any error.

Infringement

Mor-Flo argues that the district court erred in its infringement analysis because it failed to consider all of the requirements of the claim and it compared Mor-Flo's device with one of the figures in the patent. Mor-Flo's arguments are without merit. The district court stated that "[t]here is no question that the defendants' process includes steps 2 through 5 of the patented claim if the plastic 'sleeve' is a plastic 'envelope'." The court then proceeded to find that Mor-Flo's sleeve was an envelope for purposes of the claim. The court did find that "[i]n fact, the sleeve and the figure 5 embodiment (partial

envelope) are identical structures which are simply secured differently at the bottom of the tank." But, it was not error for the district court to consider the claims in light of the specification. Mor-Flo has failed to demonstrate any error by the district court.

Mor-Flo also argues that the district court erred in finding its method infringed State's patent under the doctrine of equivalents. It claims that, by broadening the claims in suit to cover its sleeve, the claims also read on the Japanese patent. The only testimony offered by Mor-Flo on this issue was that of its expert, whose credibility the court found to be undermined. The district court also found that the applicability of the Japanese patent was limited because it did not explain how the structure was put together. Therefore, Mor-Flo has failed to demonstrate any error by the court in its application of the doctrine of equivalents.

Section 102(b) Defense

Mor-Flo contends that State's patent is invalid because a product produced by the patented process was on sale more than 1 year prior to the application date. Mor-Flo relies on the price lists distributed to State's customers for foam insulated water heaters and the model displayed at a trade show to prove the on-sale bar. The district court considered this evidence and concluded that it did not show that an offer was made of a product produced by the patented method because other methods of foaming heaters were known and there was no indication of how the heaters were to be produced, or how the model was made. Mor-Flo has not shown any error by the district court on this issue.

Finally, Mor-Flo argues that the district court erred in concluding the method was not reduced to practice prior to the critical date. The district court found that the

heater tested by Underwriters Laboratories (UL) was not made by the patented method because it did not use an envelope. The court determined that the bag used on that heater did not envelop the tank as the patent contemplated, was not used to contain the foam, and had not demonstrated that it would work for its intended purpose. For these reasons, the court concluded that the UL heater was not a successful reduction to practice. Mor-Flo has failed to show that the district court committed error in rejecting Mor-Flo's section 102(b) defense.

PATENT ACT OF 1952

United States Code, Title 35

Section 102. Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by

another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or

(f) he did not himself invent the subject matter sought to be patented, or

(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.